NOVEMBER 24, 1952

NEWS ISSUE

Electrical World

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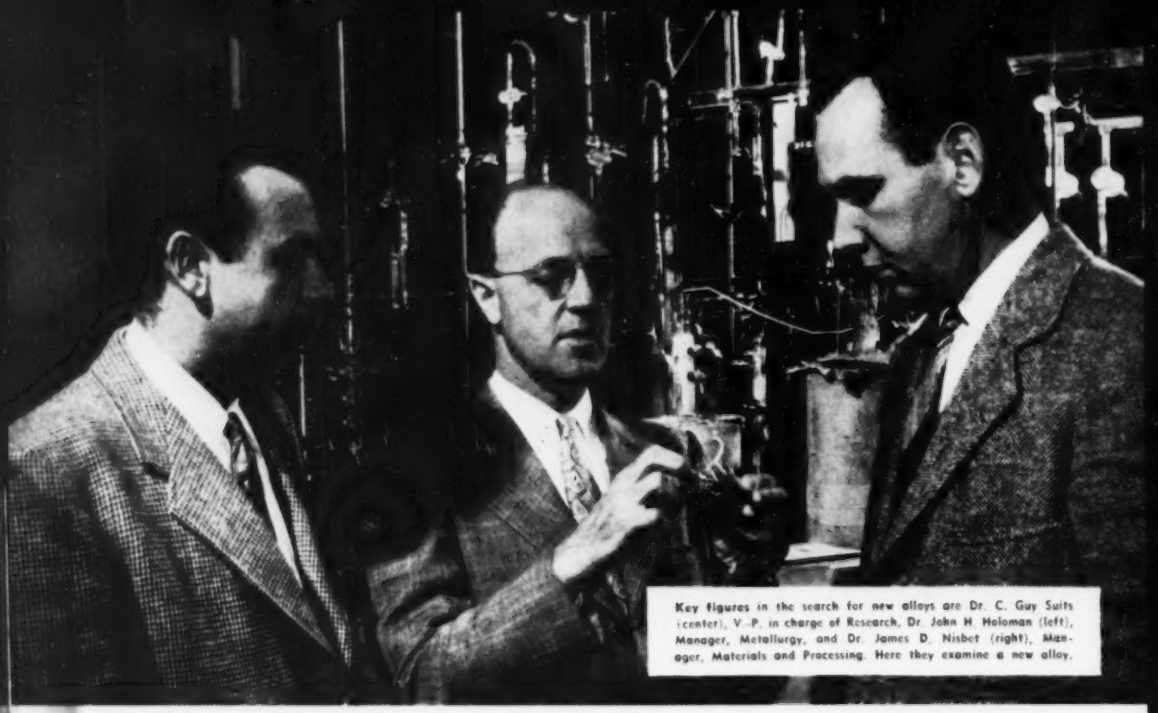
UN Finds Power Production Pressing 900 Billion Kwhr a Year . . . Page 14



Key figures in the search for new alloys are Dr. C. Guy Suits (center), V.-P. in charge of Research, Dr. John H. Holoman (left), Manager, Metallurgy, and Dr. James D. Nisbet (right), Manager, Materials and Processing. Here they examine a new alloy.

Basic research blazes new trails to BETTER ALLOYS for TOMORROW'S POWER EQUIPMENT

Research leading to improved alloys, vital to future progress in many fields of equipment design, is one of the most important programs now under way in the General Electric laboratories.

Aimed at systematic exploration of the entire range of possible alloy compositions, the program is the most far-reaching investigation of its type ever launched by any manufacturer.

New methods of melting and other advanced techniques are making possible the production of many unusual alloys, offering entirely new potentialities. The work of evaluation is being aided by the most modern laboratory equipment. Turbine alloys, for instance, are tested for long-time, high temperature creep in specially developed creep furnaces. Other tests supply complete data on such properties as hardness, ductility, corrosion resistance and high temperature rupture and tensile characteristics.

Already, practical application of several new alloys has been made.

Even more important, however, is the promise for tomorrow. With the knowledge constantly being gained, new trails are being blazed that will lead to continuing advances in practically all types of power equipment. Alloy research is an investment for the future from which the entire industry will benefit. General Electric Company, Schenectady 5, N. Y. 301-217

Evidence of the scientific approach to alloy research are the three-dimensional graphs in use above. Each pin in the rear graph represents an alloy, with the height of the pin proportional to its hardness.

Cendal, new aluminum alloy, is a recent product of G-E research. Lighter than copper but just as strong, it was developed to solve problems of high centrifugal forces that limited the size of large 3600-rpm generator rotors. At right, Cendal rotor winding is being examined by C. H. Holley, engineer, and H. D. Taylor, in charge of generator engineering.

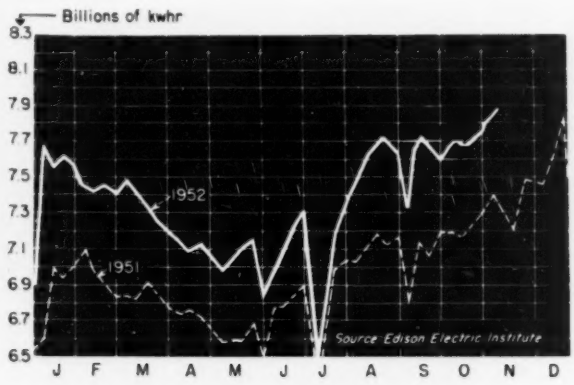
MORE POWER TO AMERICA

GENERAL ELECTRIC

VOLUME 138, NO. 21

November 24, 1952

Electrical World



Output Week Ended No. 15—7,752,925,000 Kwhr

Per Cent Change From Previous Year

	Total US	New Eng.	Mid. Atlan	Cent. Ind.	West Cent.	South-east	South Cent.	Rocky Mount.	Pacific NW	Pacific SW
Nov. 15	+7.5	+14.9	+6.2	+7.0	+7.3	+10.8	+7.9	+6.4	−4.2	+11.0
Nov. 8	+5.6	+11.6	+3.4	+4.9	+6.7	+7.4	+10.1	+6.1	−4.4	+8.4
Nov. 1	+5.9	+8.7	+4.0	+6.2	+5.9	+8.6	+5.6	+6.8	−4.4	+10.7

Electric Power Statistics

		Latest Month	Preceding Month	Year Ago
Peak Load (Million Kw)	Aug.	69.8*	67.2	64.4
Capacity (Million Kw)	Sept.	78.78	78.31	74.29
Production (Billion Kwhr)	Sept.	33.38	34.36	30.25
Hydro		7.36	8.52	7.03
Fuel		26.02	25.84	23.24
Fuel Consumption				
Coal (Million Tons)	Sept.	8.82	8.57	8.60
Oil (Million Barrels)		6.03	5.38	5.06
Gas (Billion Cu Ft)		97.37	104.97	77.34
Sales (Billion Kwhr)	July	27.70	27.67	26.50
Residential		7.50	7.44	6.55
Commercial		5.30	5.00	4.70
Industrial		12.64	13.20	13.13
Other		2.25	2.03	2.12
Net Income Class A & B Companies				
Utilities ($ Million)	Sept.	73.12	68.67	58.95
Estimated Dec. 52 Peak (Million Kw)	Aug.	80.0	80.1	79.7
Kwhr per Residential Customer (12 Month Average)	Aug.	2,119	2,104	1,947
Revenue per Kwhr Residential Service (12 Month Average)	Aug.	2.77¢	2.78¢	2.83¢
Canadian Production (Billion Kwhr)	Aug.	4.97	4.84	4.60

Business Statistics

FRB Industrial Production Index†††	Sept.	228	218	223
Gross National Product Annual Rate ($Billion)	3rdQtr.	344.0	343.2	337.1
E. W. 5 Industry Production Index	Sept.	123.5	120.5	123.5
ENR Construction Cost Index††	Oct.	123.3	122.9	114.6
BLS Consumer's Price Index	Sept.	190.8	191.1	186.6
NEMA Insulation Materials Sales Index†	Aug.	451	470	539
NEMA Electric Appliance Sales Index†	Aug.	236	234	210
NEMA Household Refrig. Sales Index†	Aug.	148	197	97

* Estimated. † 1936=100 †† 1949=100 ††† 1937-39=100 (Unadjusted)

THIS WEEK

The Electrical Week	5
In the Industry	10
Technical Notes	10
News About People	29
Meetings	34
Sales and Service	38
Industrial Relations	40
Financial	42
Manufacturers and Markets	46
Electrical Business Outlook	50

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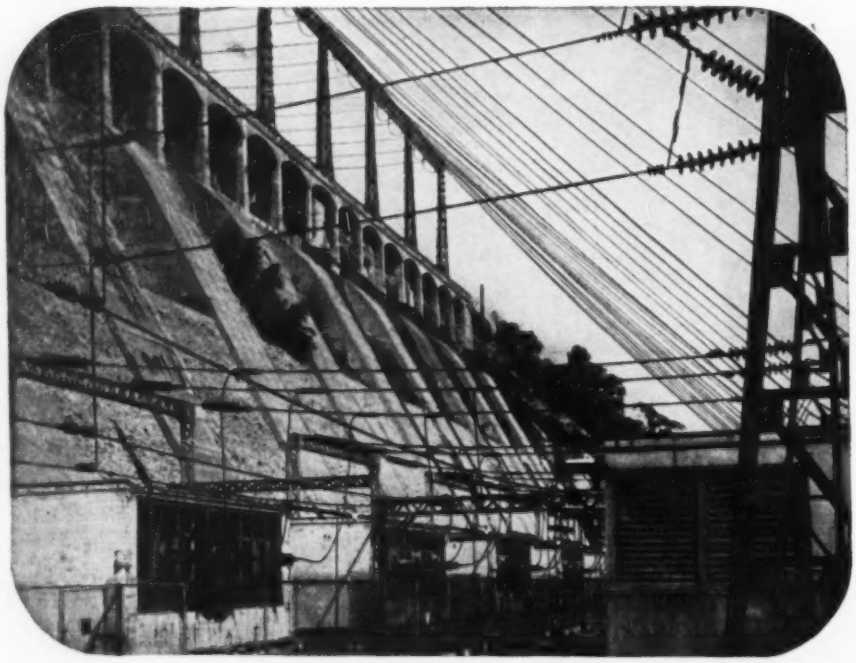
V. C. CABLE



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THE ELECTRICAL WEEK

The Issue's News Highlights—General Public Utilities is building a 196-mile, 220-kv Pennsylvania tieline from Shawville to Hosensack to move larger blocks of low-cost power from soft coal regions to consumers in its eastern area.

National Association of Railroad and Utilities Commissioners comes out against federal power preference clause.

Off the Washington Wire—E. M. Naughton, assistant general manager at Utah P&L, is new director of Engine and Turbine Division at NPA . . . Lemore W. Clark, general superintendent of underground lines at Detroit Edison, takes over as director of Materials and Equipment Division at Depa.

Washington mobilizers are keeping a close watch on Pacific Northwest power situation to see if further cuts are needed. Ten per cent of firm power to large industrial users went off Nov. 17.

FPC has authorized Wisconsin P&L to acquire and merge into its system the properties of Nekoosa Edwards L&P . . . Some attempt may be made to bring the St. Lawrence Seaway project before the next Congress to get full U. S. participation, but observers believe little will come of it.

California will join with Arizona in asking the Supreme Court to referee the dispute between the two states over division of Colorado River water—key to the proposed Central Arizona Project.

Utah Supreme Court upholds an order of PSC directing Utah P&L to sell supplemental power to municipal system at Nephi. The community seeks to buy from Utah P&L because it can get lower rates than from Telluride Power from whom it had bought power. Both utilities questioned PSC's right to compel Utah to serve an area outside its "trade district." In his ruling judge cited Nephi's willingness to build a line into a town served by Utah P&L.

Labor—Seven Detroit Edison workers accused by the company of violence and "destructive acts" during the recent strike were back on and off the job last week. The original discharge of five and suspension of two held up signing the contract from Nov. 12 to Nov. 14. The company agreed to recall them to work and then discharge or suspend them a second time, with the provision, however, that their cases be decided by arbitration.

Allan S. Haywood, CIO executive vice president, has best chance of succeeding Philip Murray as CIO president. As director of organization for CIO, Haywood has been godfather to many CIO unions, including Utility Workers Union of America. He served on the utility workers organizing committee from 1938 to 1946 and still is an "adviser" to UWUA.

Association of Washington Irrigation Districts has voted down a resolution urging Reclamation Bureau to leave the power business alone and return to reclamation, but has approved a resolution urging local control in the distribution of power.

NEMA's Electric Range Section is laying plans for an electric cooking month in May 1953. It will urge electric utilities, appliance dealers, electric leagues, and others concerned to unite in concentrating on electric range cooking.

NEMA estimates that between 1950 and 1960 an additional 1.8 million wired homes will be added bringing the total of electrified homes in the U. S. to nearly 50 million. By 1960 expectation is that 99% of the nation's homes will be electrified.

Highest television transmitter in the country will be that of KSL, Salt Lake City. A 370-ft tower atop 9,120-ft Coon Peak in the Oquirrh mountain range will give a total height of 9,490 ft above sea level. If the construction crews can beat the winter snows, the station will be telecasting to most of Utah and part of Idaho by the end of November.

Rates—Gulf States Utilities, Beaumont, Tex., gets authorization from Louisiana Supreme Court to boost its rates in 19 parishes in southwest and south-central Louisiana by 20%. Decision reversed a decree by a district court judge upholding Louisiana PSC in its denial of the company's application for higher rates.

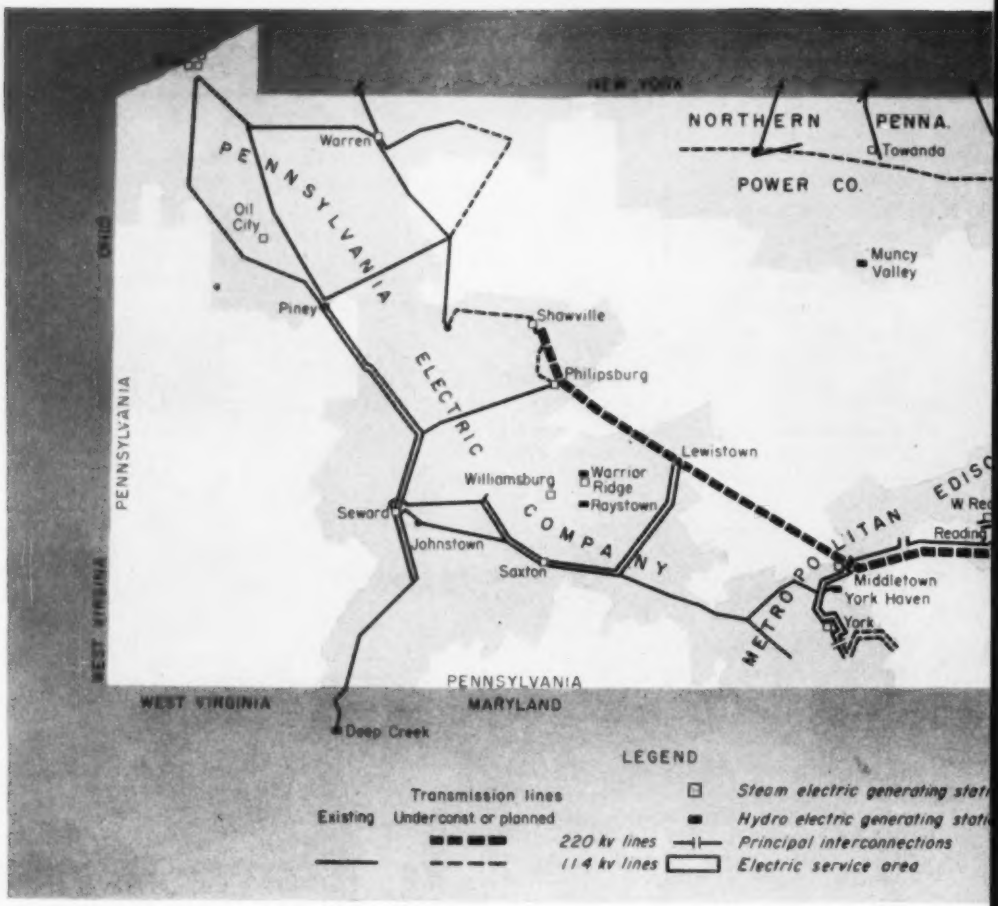
Puget Sound P&L asks Washington PSC for permission to raise rates 22%, effective Dec. 1, because of the extra expense incurred in use of steam generation to supplement hydro power which has fallen off as a result of drought conditions . . . Consolidated Edison boosts New York City's bill for power to run transit facilities 37%. Although effective last week the new rate schedule may be modified by agreement with the city or PSC action.

Public Power Forum (held during EEI Industrial Relations Conference at St. Louis)—Frank M. Wilkes, president of Southwestern G&E says pending contract with SPA and 12 companies should end "friction and squabbling" in Southwest area . . . W. E. Wood, Vepco executive vice president, declares, "Threat of competition with federally generated power in Southeast area during next ten years seems quite remote."

General Counsel Northcutt Ely of American Public Power Association contends SEC has no legal authority under Public Utility Holding Act to include publicly owned utilities in its integration studies.

A threat to purchase of Central Valley Project by California is seen in the existing and proposed power contracts being negotiated by USBR with public agencies. The California Central Valley Flood Control Association believes CVP power is being offered for sale in these contracts at rates which appear to be too low to permit ultimate repayment of capital investment in project work.

Chelan County PUD may press condemnation of certain properties of Washington Water Power, Washington Supreme Court rules. Decision upholds county judge who refused WWP request to discuss action started by PUD in 1945.



'Backbone' of GPU System Will Be

196-Mile line from Shawville to Hosensack, Pa., plus 114-kv network will make possible transmission of energy from low fuel-cost area of western Pennsylvania to eastern subsidiaries

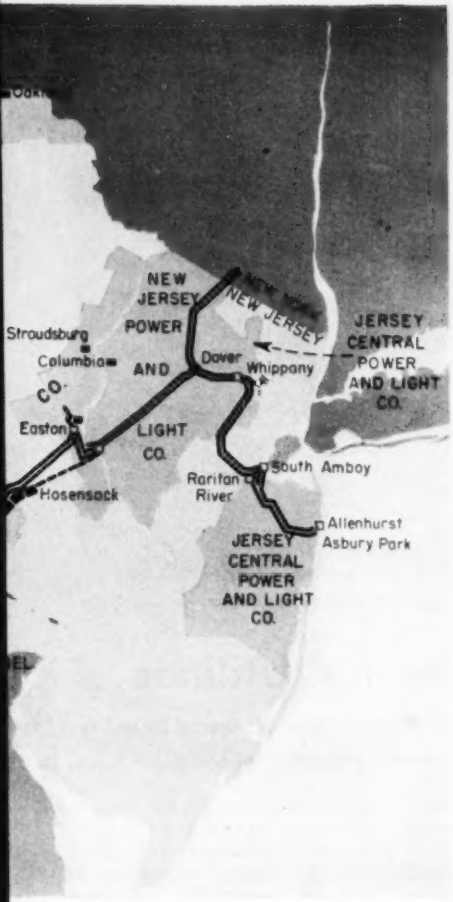
To form a "backbone" for its 19,650-sq mi, Pennsylvania-New Jersey system, General Public Utilities Corp is building a 196-mile, 220-kv transmission line. It will run from Shawville in western Pennsylvania to Hosensack in the east. The $20.5-million line is to be completed by the end of 1954 as part of a five-year, $286-million expansion program.

Four operating companies of the system Pennsylvania Electric Co, Metropolitan Edison Co, New Jersey Power & Light Co, and Jersey Central Power & Light Co, are now interconnected by 114-kv lines. A fifth subsidiary, Northern Pennsylvania Power Co, will be little affected by the 220-kv line, though its lines are part of the GPU's 4,000-mile transmission net.

The proposed tieline will make it possible to move much larger blocks of energy from low fuel-cost plants in the soft coal fields of western Pennsylvania to the East where most of the system's 800,000 customers reside. It will also permit the most economical scheduling of GPU's 28 generating plants in the two-state area.

The line is being constructed in sections designed to be placed in operation in conjunction with new capacity under construction.

The first section from Reading to Hosensack will begin operation at 114 kv by late spring of 1953 when the third 80,000-kw unit at Metropolitan's Titus Station has been completed. The second section from Shawville to Middletown is scheduled for completion late in 1953 when Penelec's Shawville Station puts its first 125,000-kw unit in operation. The third or closing section between Middletown and



220-Kv Tie

South Reading is scheduled for completion in the fall of 1954.

Numerous terminal points along the new line will make it possible to tie it in with the service areas of the four companies. Penelec's northwestern system will be tied in at Shawville. At Lewistown a new 100,000-kva substation will tie in the facilities in that area and will provide a connection with the existing 114-kv, cross-state interconnection at Shade Gap, 40 miles to the south.

At Middletown Junction a 150,000-kva substation will serve as terminal point for an existing 114-kv network stretching south and east. A line to Safe Harbor now operating at 66 kv is to be increased to 220 kv to provide a substantial tie with Pennsylvania Water & Power Co. At South Reading a 150,000-kva substation will be erected to permit a tie with the 114-kv network in that area.

Two interconnections are to be made with Pennsylvania Power & Light Co. The one will be at Hummelstown where a 150,000-kva substation is to be erected. The other will be Hosensack (EW, Nov. 3, p 92). Here two substations are to be erected. PP&L will build one, Metropolitan the other. They will be connected through auto transformers owned by the latter. The newly proposed PP&L substation will then be connected to the present existing Pennsylvania-New Jersey ring.

Pennsylvania-New Jersey Interconnected . . . The Metropolitan substation will provide terminals for existing 114-kv lines to Metropolitan's substations at Reading and Glendon (near Easton), Pa. as well as for a new 114-kv line to the Gilbert substation of New Jersey P&L. From here a 114-kv line will be built to West Wharton via Belvidere, thus creating a third tie between areas served in New Jersey.

A tie with the Pennsylvania-New Jersey ring now is maintained through a 114-kv line from West Wharton substation of NJP&L to the Roseland substation of Public Service Electric & Gas Co. Planned construction will take this line through the Jersey Central substation at Whippany. Two lines from Whippany to the Raritan River substation will be converted from 66 to 144 kv.

Steel towers, fabricated on the ground and lifted into position by mobile cranes, will carry the 220-kv line over four ranges of the Appalachian Mountains and over the mile-wide Susquehanna River. There will be 939 towers, 75 to 135 ft high, at an average span of 1,100 ft. For approximately 52 miles 1,033,500 circ mil (1.246 in.) ACSR conductor will be used. The remainder will be 795,000 circ mil (1.14 in.).

Co-op Victory

Court paves way for East Kentucky Electric Cooperative to build distribution

East Kentucky Rural Electric Cooperative Corporation, Winchester, has been given the legal go-ahead to construct its 597-mile distribution system provided the new lines do not parallel existing lines of private utilities or it can be proved there is a need for such lines even if they do parallel existing facilities.

A supplementary opinion issued by the Court of Appeals interprets duplication as meaning more than the mere physical matching of facilities. The court laid down a yardstick by which to test duplication:

- Is capital expenditure excessive in relation to efficiency?
- Would there be an unnecessary multiplicity of physical properties?
- Would there be excess physical facility?

Amplification . . . The opinion issued by the court Nov. 13 is an amplification of a ruling it handed down June 20 which granted East Kentucky the right to build a $30-million generating plant at Ford. The June decision directed the Public Service Commission to determine whether the co-op should be permitted to build the transmission lines with special instructions "wasteful duplication" was to be avoided.

Decision Stands . . . But the court did not spell out what it meant by "wasteful duplication" and the litigants sought a new decision. The court refused to change its June 20 order but did make substantial changes in its opinion. The effects of these changes are as follows:

- PSC should grant co-op right to build lines where they will not parallel existing lines.
- When co-op seeks to build lines which would parallel facilities in existence, the yardstick of "duplication" should be applied.
- If yardstick shows "wasteful duplication" would exist, PSC should determine feasibility of distributing co-op energy over private lines.
- If this is not feasible, PSC should authorize co-op to build parallel lines anyway "because the need for service is clear."

St. Lawrence . . .

. . . power development is nearer to realization as FPC moves on New York application

With the politics of the St. Lawrence power project apparently settled by the Nov. 4 election, Federal Power Commission has scheduled hearings to begin Dec. 9 on the New York State application to build the project.

Republican victory of Dwight D. Eisenhower would seem to improve the chances of the Power Authority of the State of New York in obtaining a federal license to undertake the $250-million power facility. New York Gov Thomas E. Dewey, an Eisenhower confident, is outspokenly in favor of this means of building the power facility, which is a vital link in the overall seaway project.

Extended Date for Protests . . . Just previous to the election, FPC announced that it was extending until Dec. 1 the time in which protests would be received in connection with the New York application. This led to speculation that the Truman Administration might make one more attempt to have the federal government undertake the power portion of the project.

While there is still time for federal agencies to enter protests or file petitions to intervene in the case, there had been no such move as of early last week.

In announcing that it had granted 23 petitions to intervene in the St. Lawrence power project hearings, FPC sought to place one important responsibility upon each of them. They will be required to establish the facts and law from which the nature and validity of their alleged rights and interests may be determined.

FPC permitted St. Lawrence River Power Co to intervene for the purpose of determining: (1) Its right to divert and continue the diversion of water from the St. Lawrence River for use through its Grasse River power plant; (2) the effect of its rights upon the project; and (3) what further action may be appropriate under the circumstances in administration of the Federal Power Act.

Commission sources estimate it will take a minimum of four months or longer to review problems involved and reach a decision on the project.

NEW PRESIDENT of NARUC is Eugene Loughlin, member of Connecticut Public Service Commission

Unfair Treatment of Utilities . . .

. . . in purchase of power from federal plants is scored by utility commissioner at NARUC annual convention in Little Rock

Private electric companies are being discriminated against in the purchase of electricity from federal plants, Idaho Public Utilities Commissioner H. N. Beamer told delegates to the National Association of Railroad and Utilities Commissioners at the 64th annual convention in Little Rock, Ark., recently.

Federal power projects are tax free, he declared, and have all the low interest credit and borrowing power of the federal government behind them.

Discrimination . . . The existing discrimination is the more apparent, Beamer said, "not only because of the fact that many of preference agencies are not subject to the state commission regulation, but also because of the fact that most of them are free from tax burdens which regulated utilities, and their customers, must pay."

"All citizens should have the right to obtain government power from federal projects on an equal basis and without discrimination, without depriving the states of their regulatory jurisdiction, and in accordance with the requirements of public convenience and necessity, and not on the basis of ideologies imposed by law," he added.

A year ago, the Idaho commissioner said the preferential clause resolution concluded with an authorization that NARUC representatives appear before Congress in support of any bill that might accomplish the objectives of the resolution. He regretted there was no specific proposed legislation and recommended that the Executive Committee give the matter further study and take appropriate action.

Tax Meters . . . Meters for electricity, gas and water, and telephone pay stations are not only service meters but they have acquired the status of tax meters as well, Justus F. Craemer, public utilities commissioner of California, declared.

In fact, he said, since government owned and operated utilities pay no taxes the tax bill per customer of privately owned utilities is actually greater than $33 per capita or $130 per family of four. He pointed out that in 1951 the electric companies

had operating revenues of $5.2 billion of which they paid $1.2 billion or 22% in corporate taxes.

Asel R. Colbert, chief, accounts and finance department, Public Service Commission of Wisconsin, declared in his paper on "Accounting for Amortization of Emergency Facilities": "There is a serious question of law as to whether tax savings can be used to reduce actual taxes payable in the future in the determination of just and reasonable rates at that future time. Bear in mind that the tax adjustment plan is merely a reservation of present profits for future use. There is great doubt that past profits can be used to reduce or adjust future rates."

On the other hand, Malcolm F. Orton, director of utilities, New York Public Service Commission asked: "Why should future consumers be forced to pay higher rates for public service so that present consumers may pay lower rates, merely because Congress has acted to induce the utility serving them to invest in facilities for national defense? Yet this is exactly what would happen if the treatment for rate purposes advocated by A. R. Colbert and those agreeing with him were adopted."

No Sharp Increase in Rates . . . Pennsylvania Public Utilities Commissioner Harold A. Scragg told the delegates that utility rate increases are far below the general increases in wages, incomes and other prices.

Regulatory commissions now have more freedom, William E. Torkelson, chief counsel, Public Service Commission of Wisconsin, said, to adopt procedures which would have the effect of streamlining rate-making processes so long as they meet the test of the reasonable end-result.

He declared that "any real gains in accelerating the regulatory process must be attained by adopting this approach rather than to adopt the 'stop gap' of a temporary rate or the permitting of a rate to go into effect under bond, which is unsatisfactory due to difficulties in making refunds."

New President . . . Eugene S. Loughlin, Public Service Commissioner of Hartford, Conn., in accepting the presidency of NARUC said that "regulation practices now had become of age and that the state regulatory agencies were the one strong bulwark between private enterprise and public operation."

It's a Question of Climate

• Public and Private power groups both want to ask changes of Congress in federal power policy

• But the Congress that's coming up doesn't look eager for change. So it's a case of wait and see

The Republican-dominated 83rd Congress that meets Jan. 3 will be asked to change some laws affecting federal power policy. In addition, it will hear the usual arguments over government spending for power facilities.

Nature and extent of the legislative requests presented to the new Congress will largely depend on the climate which prevails after reorganization by Republican majorities in both houses.

But Washington lobbyists for both electric company and public power interests anticipate no dramatic changes. One casual survey made of the new Congress indicates there will be little or no shift in attitude on basic policies relating to federal power development.

Republican victory at the polls Nov. 4 was highly impressive in the Presidential race, but it gave Republicans in Congress a much narrower working majority than they had in the 80th Congress of 1946 and 1947. Congressional GOP leaders can be expected to be on their mettle in an effort to strengthen their party's position when the 1954 elections roll around.

Among representatives of public and private power interests, there is something of a "wait and see" attitude. Neither faction shows any great confidence that it will obtain preferred consideration from the new Congress or from the new administration.

In general, power representatives will continue pressing for long-range objectives and meeting immediate threats to the interests of their members.

I. NAEC Program

At a recent conference with writers for technical publications, P. L. Smith, president of National Association of Electric Companies, said his organization would continue to keep a close watch on appropriation requests for electric power facilities. He anticipates a number of Congressmen will introduce bills designed to remedy "inequities" that have cropped up under Democratic rule.

Speaking at the same NAEC press conference, Henry B. Sargent, president and general manager of Arizona Public Service Co, outlined objectives toward which the electric industry should strive. They included:

- A non-discriminatory federal power marketing policy. This would seem to mean a modification of the preference clause in various acts which gives priority to public bodies in the purchase of power from federally owned power projects.
- Amendment of the Federal Power Act to remove conflicts and duplication in the regulatory duties of state and federal commissions.
- Private construction of new power facilities and acquisition of some existing federal power facilities.
- Private development of the power portion of the atomic energy program.

On the face of it, this is a long-range program and does not depend entirely on the passage of new legislation. No more than a start could be made in the next Congress toward obtaining the changes required to carry out such objectives.

The National Association of Railroad and Utilities Commissioners, which represents state regulatory officials, supports modification of the preference clause. However, there is as yet no plan for a concerted drive for the next session of Congress.

NARUC also supports legislation which would compensate utilities for relocation of facilities made necessary by construction of federally aided highways. Two bills for this purpose were introduced during the past Congress but were never brought to a vote. Chances are these bills will be introduced again.

II. Public Power Approach

Organziations favoring expansion of federal power development have announced no new programs which they will present to the new Congress. However, most of them are working

(*Continued on page* 22)

IN THE INDUSTRY

Industry Must Release Men . . .

. . . to serve WOC in defense mobilization jobs at Washington, Fowler, ODM director, advises

When and if the next war comes, the young men, as always, will march away to serve on the front lines. But leaving at the same time without any ceremonies will be a much smaller but equally important group of industry leaders. Their destination will be Washington or other key cities from which the nation's industrial armies will be directed.

This custom, of business executives serving their country as civilians in the executive branch of the government goes back to World War I, became more widespread during World War II, and reached a point of commonplaceness during the present mobilization period. It has been said—half seriously and half in jest—that the most significant contribution of the defense mobilization program has been the creation of a "stockpile" of trained executives drawn from the ranks of industry and labor to undertake jointly with career civil servants the management of any war mobilization that the future may require.

Henry H. Fowler, director, Office of Defense Mobilization, in a recent speech at New York told of the work done by these industry leaders and explained its importance to the nation.

Many Have Served . . . Approximately 650 specialists from industry have been certified as "persons of outstanding experience and ability" qualified to serve "without compensation" in the Defense Production Administration and the National Production Authority. Approximately 300 of these men have served six months and have qualified for a Certificate of Service.

So far 1,015 persons have served Without Compensation or with pay only When Actually Employed in DPA and NPA. Of course there were many others in government agencies including the Defense Electric Power Administration where most utility company men served.

In addition over 7,000 men served on NPA's 550 industry advisory committees. These men come to Washington whenever a meeting is called by the presiding government official. They serve as an indispensible backlog of advice, information, and cooperative contact between government and industry on their joint concern, national security.

Industry Must Release Men . . . Fowler pointed out the importance of industry being willing to release executives for service with the government:

"Our defense and the industrial readiness to achieve quickly a full mobilization during the years ahead will continue to be the biggest and most important business in America. We must be able to continue to draw on the management and scientific brains of the nation not only through contacts but also to help in public administration of what is basically a production and economic management job.

"The burden must rest primarily upon industry. The nation's business leaders must accept ungrudgingly the necessity of making available for this particular civilian public service some of their ablest executives, regardless of their attitude toward other governmental activity. Believe it or not, some of the most far-sighted companies and even industries are operating on that premise today and accepting this responsibility."

Fowler listed certain steps the government can take to supplement the career service now and in future emergencies with this specialized personnel from the cadres of management and labor:

1. The government must continue to provide for and encourage the use of men borrowed from industry to serve the defense mobilization program without compensation by maintaining the appropriate legislation and protective regulations on their use—protective to them and to the public when a conflict of interests is involved.

2. A reappraisal of the present method of recruitment of executive personnel for service under the level of the President's appointive power. The present methods are too haphazard and have led to difficulties.

3. The execution of a policy whereby industry people working for the government are regularly and periodically rotated.

4. The creation of a reserve corps composed of those who have served and will serve in the future in the defense program.

For the industry Fowler's suggestions are something to think about now. As he says:

"Whenever American men and women directly concerned who are best suited to these posts refuse the burden and responsibility, we have lost the greatest strength of a free society in the period of its most critical danger."

TECHNICAL NOTES

ARCHER E. KNOWLTON

Vibration dampers appear to be more effective if they are not located at the anti-nodal points on transmission lines.

Turbine heat rate is rarely affected by more than one percent by use of drain coolers, desuperheating sections or by varying heater terminal difference for a given number of heaters and a specific final feedwater temperature.

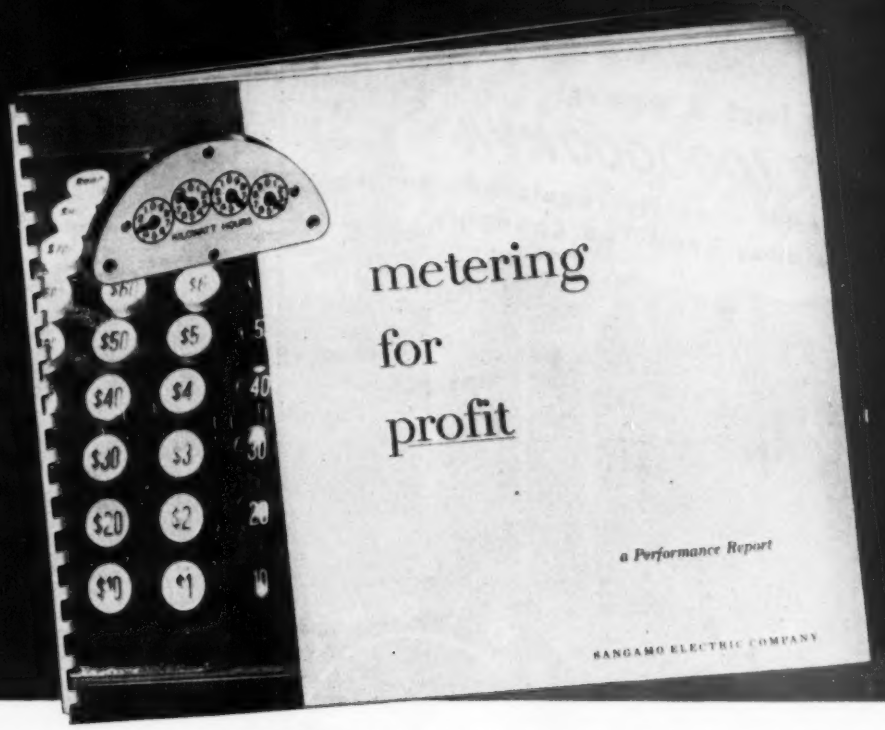
Atomic power reactor of 10 Mw at 25% thermal efficiency would have to develop 40 Mw of thermal energy and therefore use up 1½ oz of fuel per day. A year at 100% load factor would burn up 33 pounds.

Mechanical damage and corrosion account for 2/3 the troubles experienced with high-voltage cables.

Non-combustible filling compound is being sought for boxes on ac network mains.

Car-humping and other shocks of modern railroading subject transported equipment to jolts of 11 g or more. Designs once were aimed at a maximum of 5 or 6 g.

Series capacitors should be located at sectionalizing substations so that they can readily be kept in circuit for stability contribution after the fault has been cleared.



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Would you like to know what makes OUTDOOR METERING possible?

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Would you like to know how HIGH BILL COMPLAINTS can be reduced?

Damping magnets control the speed of the meter. Accuracy depends on the permanence of their strength. Millions of J Meters equipped with Alnico magnets have been in operation for years without a report of a single one of them speeding up in service due to loss of damping strength.

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Meters are important to everybody in the Electric Utility Industry—not only because they are the operating components through which every cent of revenue is measured—but, because modern meters can help the industry obtain the maximum benefits in "Metering for Profit."

Would you like to know how modern meters can promote good public relations?

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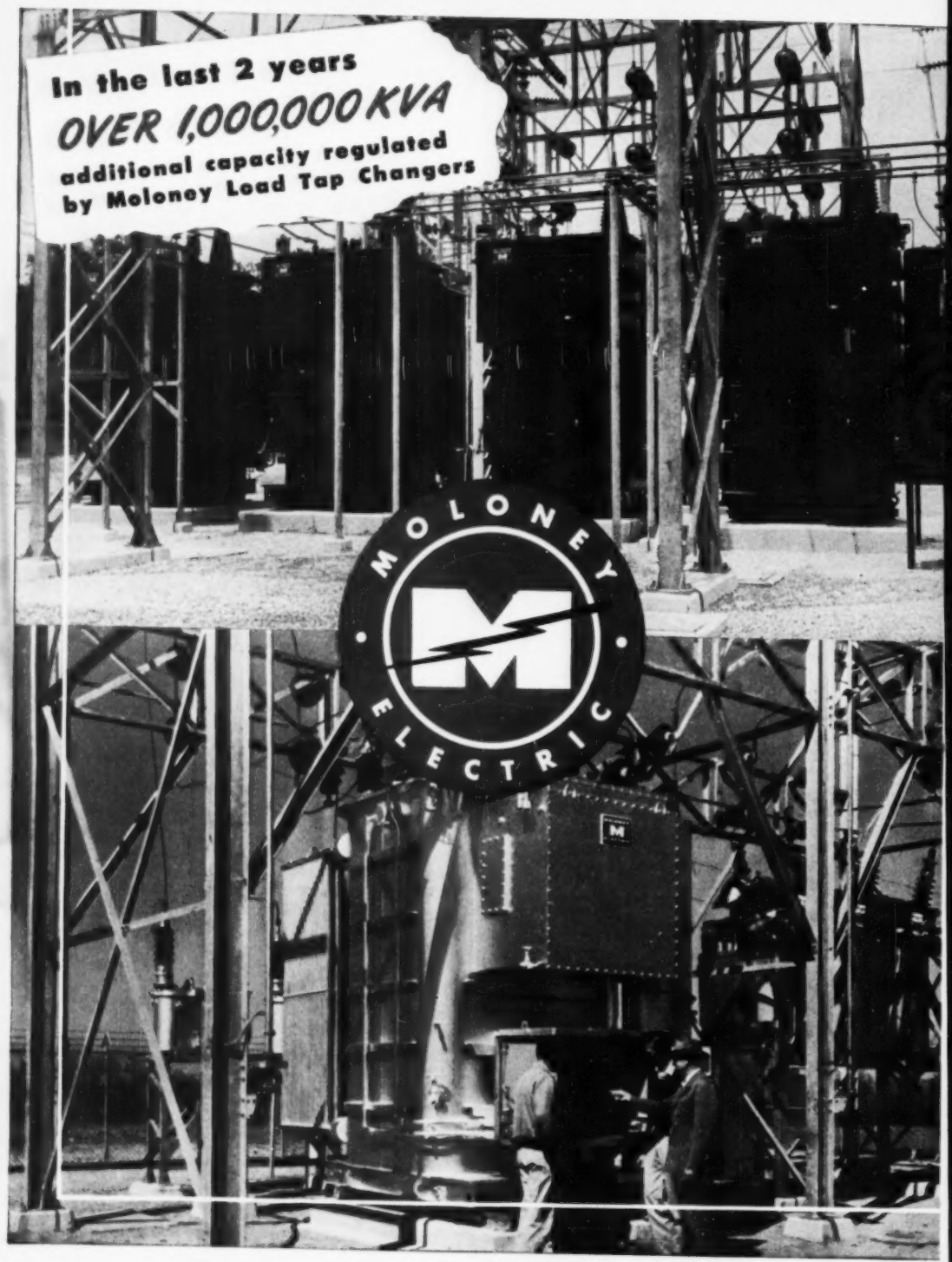
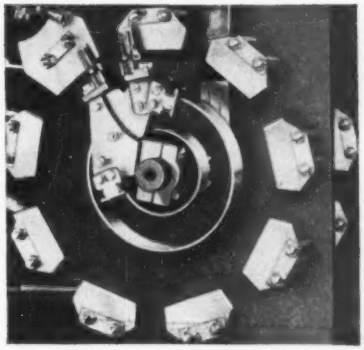

In the last 2 years
OVER 1,000,000 KVA
additional capacity regulated
by Moloney Load Tap Changers
MOLONEY
ELECTRIC

MOLONEY LOAD TAP CHANGERS

Offer these advantages for feeder voltage regulators, regulating transformers and load ratio control transformers

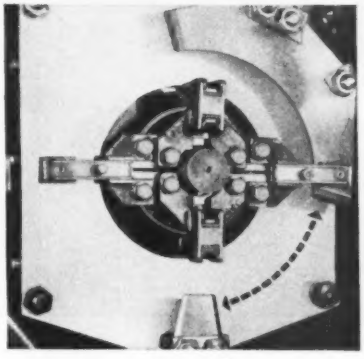
ELECTRICALLY

No arcing duty is imposed upon any of the tap selector switch contacts, avoiding the necessity for replacement due to burning or scoring. A separate switch is used for breaking load current, and a reactor in parallel with this switch during each opening and closing keeps arcing here to a minimum. Virtual elimination of arcing not only prolongs the life of the contacts but also preserves the quality of the oil in the tap changer compartment.



MECHANICALLY

The load transfer switch, which is the only switch required to transfer load current, is provided with accelerating springs and is driven by Geneva gears. The design provides a means of opening and closing the load transfer switching elements at a high rate of speed without shock to the gearing or other parts. Moloney Load Tap Changers have been inspected in the field after more than 500,000 operations and have been found to have no mechanical wear sufficient to require replacement of parts other than contacts.



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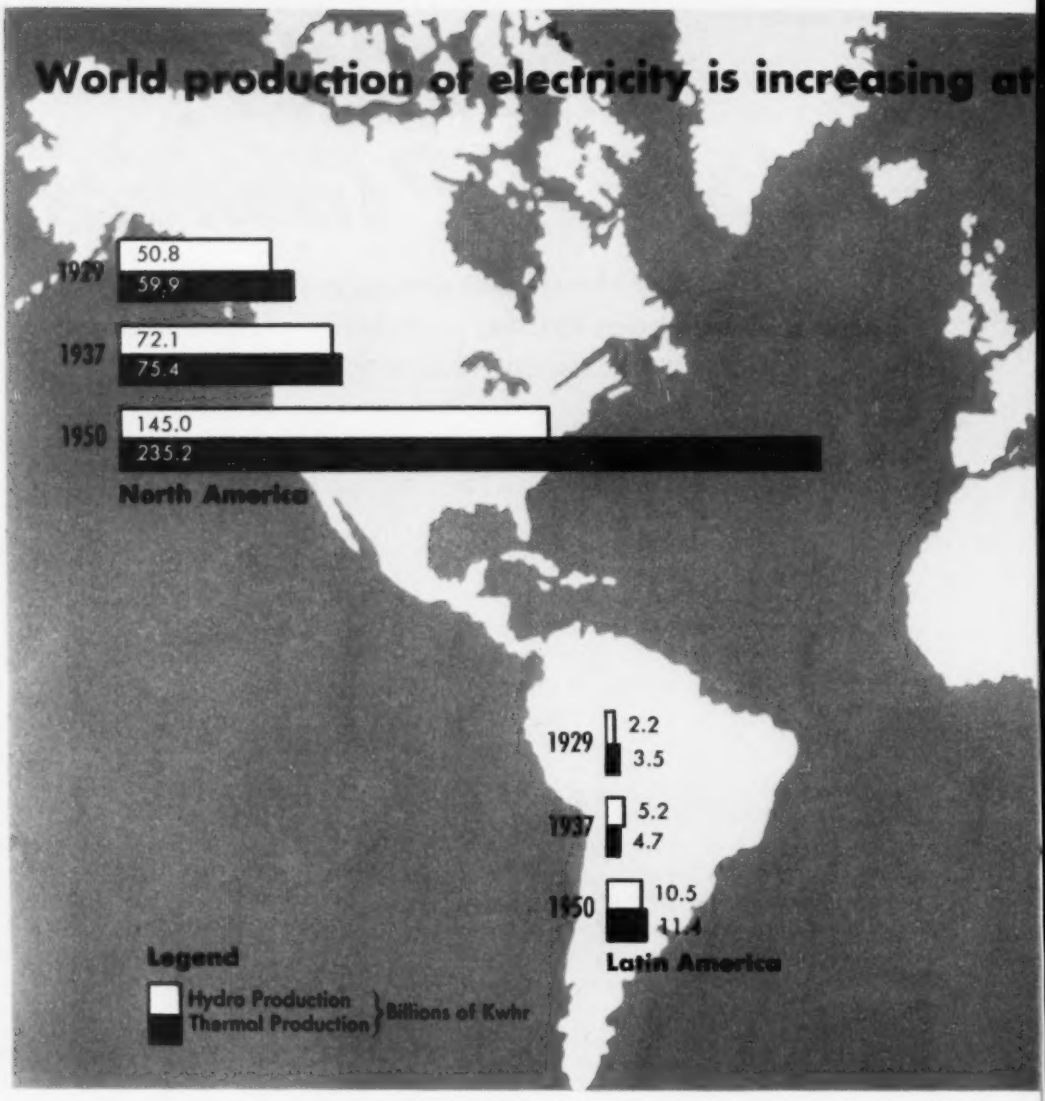


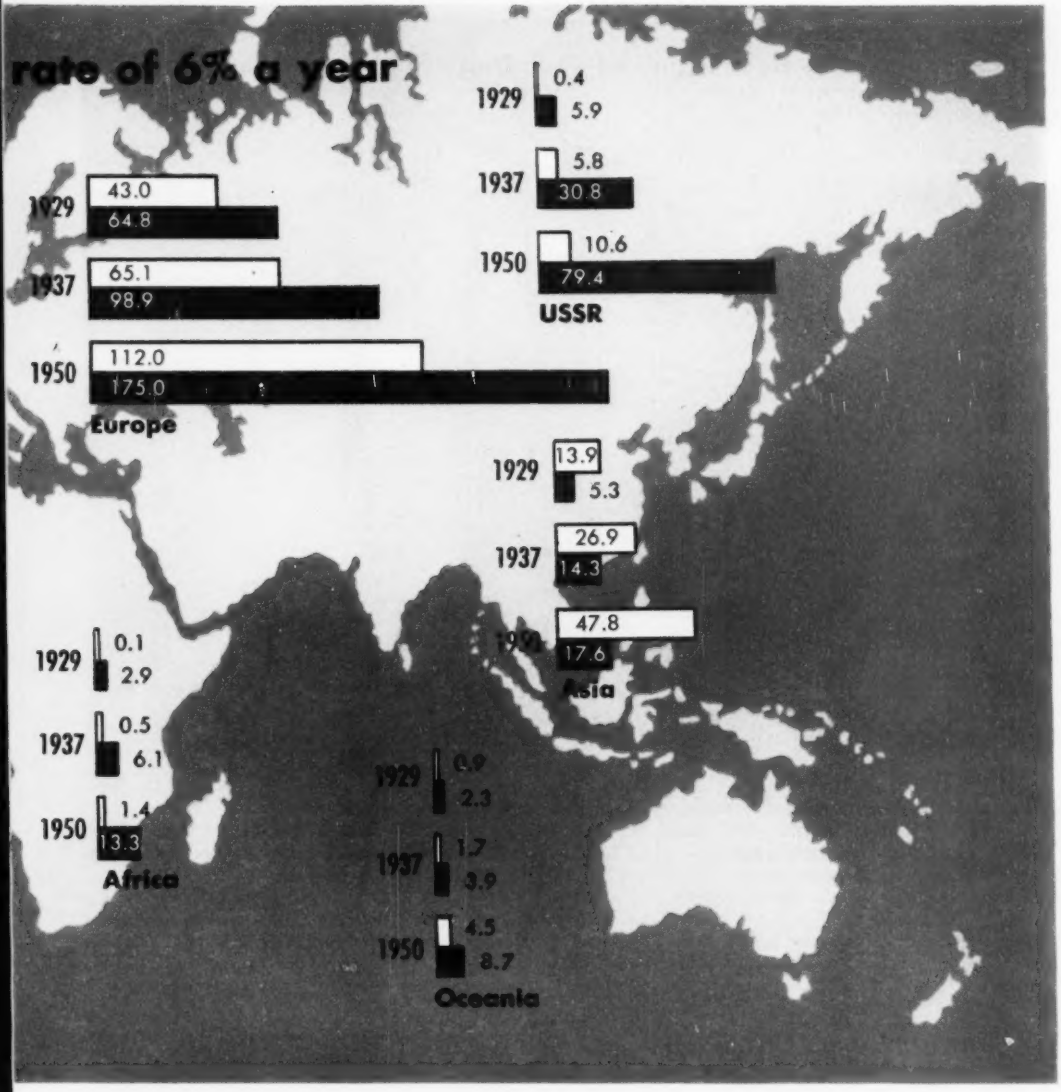
United Nations Finds Power Production

World production of electricity has been increasing at the rate of 6% a year over the past two decades. By 1950, it had reached the astronomical total of 872 billion kwhr.

Production at least trebled in all continents except Europe; there it went up 167%. The output of the USSR in 1950 was 13 times that in 1929.

These and other significant data on electric power were gathered by the Statistical Office of the United Nations in a study, just published, of world energy supplies. The study, based on figures from 150 countries with a total population of 2,350 million persons, covered non-commercial as well as commercial sources of energy. (Example, from India, of a non-commercial source: dried camel dung).

Thermal Expansion Leads . . . Output from thermal plants, the survey indicated, grew more rapidly in the world as a whole than did that from hydroelectric plants. The overall growth can be attributed chiefly to the great ex-



Pressing 900 Billion Kwhr a Year

pansion of thermal power facilities that has taken place in North America and Europe. In Asia, the only continent in which hydro predominates, hydro and thermal output increased apace. In other regions studied (see map, above), hydro production went up more rapidly than thermal.

Of 872 billion kwhr produced in 1950, about 62% came from thermal plants and 38% from hydro and geothermal sources.

Four Base Years . . . The U. N. Statistical Office chose to concentrate on four years during the period 1929–1950 for its study. These were 1929, 1939, 1949, and 1950. The first two represented peak years of economic activity during the inter-war period. The second two are the most recent years for which data on all commercial sources of energy were available.

Together, electricity and gas, with their relatively high efficiency, can be used as an indicator of a region's degree of industrialization. Thus, an

How the Regions Have Increased Their Output—Billions of Kwhr

		Production			% of regional total	
		Hydro	Thermal	Total	Hydro	Thermo
North America[1]	1929	50.8	59.9	110.7	45.8	54.2
	1937	72.1	75.4	147.5	48.9	51.1
	1950	145.0	235.2	380.2	38.1	61.9
Europe[2]	1929	43.0	64.8	107.8	39.9	60.1
	1937	65.1	98.9	164.0	39.7	60.3
	1950	112.0	175.0	287.0	39.0	61.0
Oceania	1929	0.9	2.3	3.2	27.5	72.5
	1937	1.7	3.9	5.6	29.8	70.2
	1950	4.5	8.7	13.2	34.1	65.9
USSR	1929	0.4	5.9	6.3	6.3	93.7
	1937	5.8	30.8	36.6	15.8	84.2
	1950	10.6	79.4	90.0	11.8	88.2
Africa	1929	0.1	2.9	3.0	2.8	97.2
	1937	0.5	6.1	6.6	7.4	92.6
	1950	1.4	13.3	14.7	9.4	90.6
Latin America	1929	2.2	3.5	5.7	38.7	61.3
	1937	5.2	4.7	9.9	52.4	47.6
	1950	10.5	11.4	21.9	48.0	52.0
Asia	1929	13.9	5.3	19.2	72.4	27.6
	1937	26.9	14.3	41.2	65.2	34.8
	1950	47.8	17.6	65.4	73.1	26.9
World	1929	111.3	144.6	255.9	43.5	56.5
	1937	177.3	234.1	411.4	43.1	56.9
	1950	331.8	540.6	872.4	38.0	62.0
Developed Countries	1929	82.7	132.1	214.8	38.4	61.6
	1937	126.7	210.1	336.8	37.5	62.5
	1950	242.5	498.4	740.9	32.7	67.3
Undeveloped Countries	1929	28.6	12.5	41.1	69.6	30.4
	1937	50.6	24.0	74.6	67.8	32.2
	1950	89.3	42.2	131.5	67.9	32.1

Notes:
1. Excluding industrial plant output.
2. Geothermal electricity combined with hydro.

indication of comparative regional development can be obtained from the table at the left, below. In 1949, the table shows, electricity and gas represented 26.3% of the world's energy.

Electrical Growth . . . Because complete data on non-commercial sources of energy, important in the underdeveloped countries, could not be obtained, U. N. statisticians found it impractical to measure the true electrification factor for other years than 1949.

But the table at the lower right, based on commercial sources alone, can be used to gain some indication of growth of electrification within a region.

The figures, the U. N. points out, should not be used for interregional comparisons.

The study includes a comprehensive breakdown of electricity production among nations of the world. This table is reproduced on the following two pages.

Electricity and gas supplied this much of the total energy produced from commercial and non-commercial sources:

(Percent of regional energy supply—1949)

	Electricity	Gas	Electricity & Gas
North America	20.0%	20.4%	40.4%
Europe	19.2	4.5	23.7
Oceania	22.6	3.2	25.8
USSR and Other[1]	12.1	4.7	16.8
Africa	9.7	0.2	9.9
Latin America	10.8	4.1	14.9
Asia	8.4	0.7	9.1
World	16.2	10.1	26.3
Developed Countries	18.4	12.5	30.9
Underdeveloped Countries	10.1	1.7	11.8

Electricity supplied this much of the total energy produced from all commercial sources:

(Percent of regional energy supply)

	1929	1937	1950
North America	11.6%	12.7%	18.5%
Europe	13.9	16.3	22.0
Oceania	19.1	19.9	24.7
USSR and Other[1]	7.8	13.6	15.2
Africa	15.8	20.9	22.2
Latin America	19.0	20.2	20.0
Asia	15.6	19.8	22.7
World	12.8	14.9	19.6

1. Coal equivalent of electricity has been calculated on the basis of prevailing electric utility efficiencies as follows:
(Metric tons coal equivalent per thousand kwhr)
1929 = 0.9 1937 = 0.7 1949 = 0.6 1950 = 0.6
2. Chiefly USSR

How the Nations Have Increased Their Output—Millions of Kwhr

	1929			1937			1950		
	Hydro	Thermal	Total	Hydro	Thermal	Total	Hydro	Thermal	Total
Africa									
Algeria	20	175	195	36	217	253	131	455	586
Anglo-Egyptian Sudan	—	6	6	—	10	10	—	22	22
Angola	—	2	2	1	6	7	5	20	25
Belgian Congo	30	—	30	220	—	220	635	—	635
Canary Islands	—	12	12	—	16	16	2	35	37
Cape Verde Islands	—	20	20	—	25	25	—	45	45
Egypt	—	200	200	...	285	285	—	700	700
Ethiopia	...	...	...	1	2	3	15	2	17
French Cameroons	—	—	—	—	—	—	—	1	1
French Equitorial Africa	—	—	—	—	...	...	—	10	10
French West Africa	—	7	7	...	9	9	1	26	27
Gold Coast	—	6	6	—	10	10	—	27	27
Kenya	10	5	15	15	2	17	41	54	95
Liberia	—	—	...	—	1	1	8	5	13
Libya	—	...	...	—	...	...	—	31	31
Madagascar	5	—	5	13	—	13	21	7	28
Mauritius	—	—	—	1	—	1	21	—	21
Morocco	18	34	52	116	15	131	253	228	481
Mozambique	—	10	10	—	24	24	—	50	50
Nigeria	—	5	5	14	9	23	60	56	116
Northern Rhodesia	...	—	...	40	...	40	100	—	100
Southern Rhodesia	—	50	50	—	80	80	—	508	508
Reunion	—	—	—	—	—	—	—	1	1
Ruanda Urundi	—	—	—	—	—	—	—	1	1
St. Thomas & Prince Island	—	—	—	—	—	—	—	1	1
Sierra Leone	—	—	—	—	1	1	—	6	6
Spanish North Africa[5]	...	...	...	12	—	12	35	1	35
Tangenyika	—	2	2	9	10	19	30	18	48
Tunisia	—	33	33	—	59	59	—	141	141
Uganda	—	—	—	—	—	—	—	16	16
Union of South Africa	—	2,300	2,300	8	5,328	5,336	25	10,847	10,872
Zanzibar	—	—	—	—	2	2	—	3	3
North America									
Alaska	50	...	50	81	...	81	90	103	193
Canada[5]	17,604	359	17,963	176	512	27,688	48,973	1,929	50,902
Newfoundland	500	—	500	840	—	840	—	—	—
United States[5]	32,648	59,532	92,180	44,113	74,900	118,913	95,938	233,203	329,141
Latin America									
Argentine	108	1,566	1,674	97	2,102	2,199	200	4,230	4,430
Bahama Islands	—	3	3	—	5	5	—	16	16
Barbados	—	2	2	—	3	3	—	10	10
Bermudas	—	8	8	—	13	13	—	40	40
Bolivia	20	1	21	32	16	48	190	10	200
Brazil	540	200	740	1,720	315	2,030	4,200	500	4,700
French Guiana	—	10	10	—	12	12	—	15	15
French Honduras	—	1	1	—	1	1	—	3	3
Chile	275	400	675	693	753	1,446	1,400	1,600	3,000
Colombia	100	50	150	192	94	286	450	255	705
Costa Rica	30	—	30	55	—	55	100	—	100
Cuba	—	200	200	19	238	257	13	745	758
Dominican Republic	—	10	10	—	15	15	—	79	79
Ecuador	15	20	35	25	27	52	50	80	130
El Salvador	10	5	15	24	4	28	50	30	80
Falkland Islands	—	—	—	—	—	—	—	—	—
French Guiana	—	—	—	—	1	1	—	1	1
Guadeloupe	—	—	—	—	1	1	—	2	2
Guatemala	15	—	15	25	—	25	71	—	71
Haiti	—	10	10	—	13	13	—	17	17
Honduras	10	—	10	11	13	24	20	30	50
Jamaica	—	10	10	4	12	16	50	26	76
Martinique	—	2	2	—	3	3	—	12	12
Mexico	785	679	1,464	1,822	658	2,480	1,949	2,474	4,423
Nicaragua	—	5	5	1	6	7	2	25	27
Panama	—	15	15	—	27	27	—	85	85
Panama Canal Zone	65	—	65	89	—	89	251	1	252
Paraguay	—	...	...	1	12	13	1	28	29
Peru	150	50	200	235	80	315	500	300	800
Puerto Rico	40	20	60	93	27	120	244	328	572
Surinam	—	—	—	—	1	1	—	8	8
Trinidad & Tobago	—	...	...	—	5	5	—	54	54
Uruguay	—	125	125	—	203	203	500	100	600
Venezuela	25	75	100	34	40	74	250	270	520

CONTINUED ON NEXT PAGE

	1929			1937			1950		
	Hydro	Thermal	Total	Hydro	Thermal	Total	Hydro	Thermal	Total
Asia									
Aden	—	1	1	—	2	2	—	10	10
Afghanistan	...	...	...	5	—	5	40	5	45
Burma	—	—	—	—	100	100	40	35	75
Ceylon	1	10	11	1	27	28	10	71	81
China	5	2,119	2,124	6	3,920	3,926	...	...	...
Formosa	75	75	150	533	75	608	650	385	1,035
Cyprus	—	12	12	—	20	20	—	30	30
Hong Kong	—	50	50	—	80	80	—	294	294
India	500	700	1,200	1,125	960	2,085	2,600	2,503	5,103
Indochina	2	61	63	5	70	75	3	179	182
Indonesia	100	100	200	210	71	281	300	100	400
Iran	—	75	75	—	100	100	—	250	250
Iraq	—	25	25	—	40	40	—	117	117
Israel	—	—	—	—	—	—	—	530	530
Japan	11,600	1,712	13,312	22,278	8,112	30,391	38,258	6,632	44,890
Korea[5]	1,500	—	1,500	2,336	—	2,336	88	321	409
Lebanon[7]							64	50	114
Malaya & Singapore	38	161	199	235	286	521	253	647	900
Pakistan	—	—	—	—	—	—	49	115	164
Palestine	—	4	4	30	47	77	—	—	—
Philippines	50	40	90	76	80	156	191	400	591
Portuguese India	—	...	...	—	...	...	—	2	2
Sarawak	—	...	...	—	...	...	—	2	2
Syria[7]	—	15	15	29	22	51	—	81	81
Thailand	—	20	20	—	30	30	—	60	60
Turkey	—	100	100	1	299	300	30	760	790
Other[8]	—	—	—	—	—	—	5,200	4,000	9,200
Europe									
Austria	1,750	800	2,550	2,474	418	2,892	4,846	1,505	6,351
Belgium & Luxembourg	20	4,430	4,450	57	5,975	6,032	64	9,114	9,178
Bulgaria	49	37	86	134	68	202	280	450	730
Channel Islands	—	...	...	—	...	...	—	40	40
Czechoslovakia	216	2,751	2,967	57	3,558	4,115	1,100	8,000	9,100
Denmark	—	560	560	—	1,104	1,104	25	2,125	2,150
Finland	700	295	995	2,066	720	2,786	3,650	516	4,166
France	6,142	8,210	14,352	10,980	9,100	20,080	16,170	16,900	33,070
Saar	—	—	—	—	—	—	23	1,480	1,503
Germany	3,564	27,097	30,661	6,904	42,065	48,969			
West Germany							8,262	36,353	44,615
East Germany							400	15,600	16,000
Gibraltar	—	2	2	—	3	3	—	7	7
Greece	12	160	172	20	423	443	10	670	680
Hungary	7	849	856	15	1,265	1,280	70	272	2,791
Iceland	6	1	7	15	1	16	168	25	193
Ireland	31	69	100	242	67	309	468	500	968
Italy & Trieste[9]	9,970	410	10,380	14,861	569	15,430	22,781	1,543	24,324
Malta & Gozo	—	8	8	—	11	11	—	30	30
Netherlands	—	2,260	2,260	—	3,484	3,484	—	7,323	7,323
Norway & Svalbard	8,100	—	8,100	9,165	111	9,276	17,655	42	17,697
Poland	50	2,998	3,048	49	3,579	3,628	500	8,908	9,408
Portugal	73	167	240	139	267	406	436	501	937
Romania	60	510	570	89	988	1,077	200	1,900	2,100
Spain	1,982	451	2,433	2,306	166	2,472	4,619	1,693	6,312
Sweden	4,577	390	4,967	6,971	1,011	7,982	17,297	839	18,136
Switzerland	5,253	30	5,283	6,809	33	6,842	10,318	161	10,479
United Kingdom	136	11,826	11,962	755	23,476	24,231	1,478	54,859	56,337
Yugoslavia	275	475	750	450	463	913	1,175	1,227	2,402
Oceania									
Australia	150	2,136	2,286	288	3,684	3,972	1,505	7,981	9,486
Fiji Islands	—	2	2	—	3	3	—	7	7
Hawaii	...	...	...	59	211	270	25	589	614
New Caledonia	...	...	...	74	—	74	50	15	65
New Zealand	700	10	710	1,240	13	1,253	2,940	130	3,070
USSR									
USSR	400	5,900	6,300	5,800	30,800	36,600	10,600	79,400	90,000

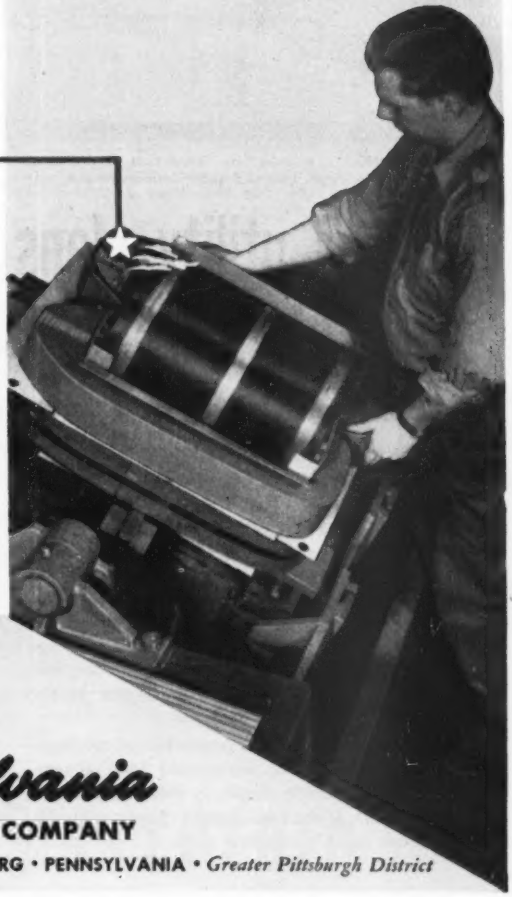
Notes
1. Approximations have been made where precise data is not available
2. Total production so far as possible, but industrial output has been omitted in certain cases such as the United States and Canada where the time series is not complete
3. Three dots (. . .) indicate that data are not available
4. Dash (—) indicates that the amount is nil or negligible
5. Spanish Morrocco only
6. South Korea only in 1950
7. Including Lebanon in 1929 and 1937
8. Estimate for China and North Korea
9. Geothermal power is included with hydro

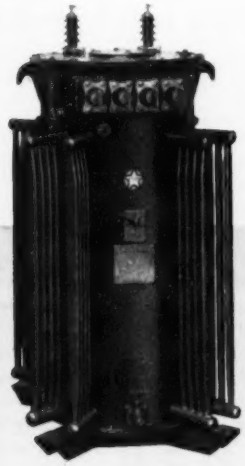
The Pole Star CORE makes the difference...

The patented design of the Pole Star core enables Pennsylvania to build Pole Star transformers through the full range of distribution sizes from 3 Kva through 500 Kva and from 2400 volts through 43800 volts. The Pole Star core takes full advantage of the high permeability and low loss characteristics of the oriented electrical steel and provides a core with low exciting current and low core loss.

Core Builder assembles laminations in 500 Kva Pole Star Coil

Laminations are brought through the coil and individually lapped. For ease of handling, core units for the 167 through 500 Kva sizes are constructed with four core sections. Each individual lamination forms its own magnetic path so that no flux has to cross from one turn to the next. In effect, each lamination is a core in itself.



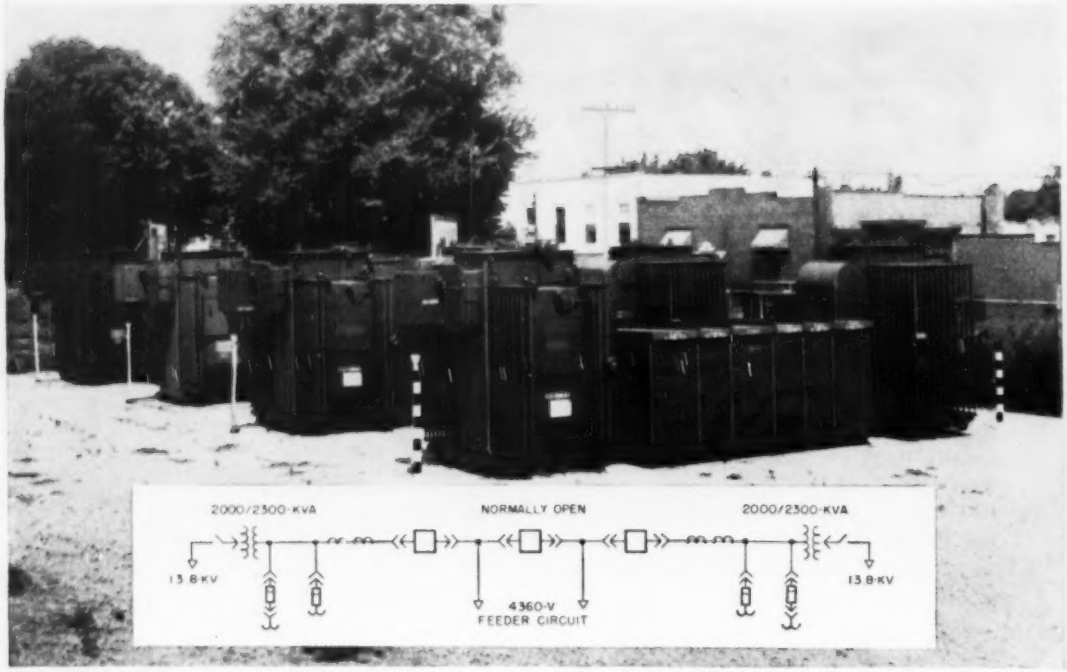


For complete information on 167 to 500 Kva Pole Star transformers, write for free copy of Catalog No. 352.

PENNSYLVANIA POLE STAR TRANSFORMER

Pennsylvania TRANSFORMER COMPANY

BOX 330, CANONSBURG • PENNSYLVANIA • *Greater Pittsburgh District*



"BLOCK BUILDING" in Kansas City. Substation 45 points up "building block" method. Two G-E 4000/4600-kva master unit substations were installed in 1947, two more in 1949. One-line diagram (inset) shows type of standardized duplex station used.

Missouri utility plans ahead for expansion using standardized G-E unit substations

Kansas City Power & Light gains system flexibility with "building block" approach

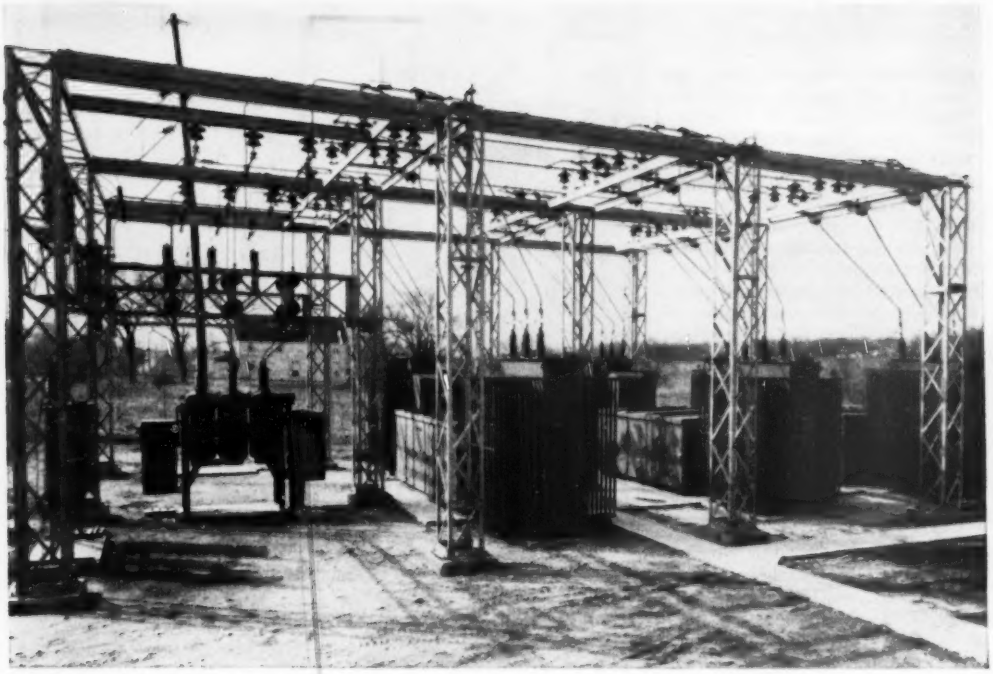
With 22 G-E standardized master unit substations installed over a five-year period, Kansas City Power & Light Co., Kansas City, Mo., knows the value of advanced planning—using duplicate units as "building blocks" in its system.

This "building block" method—which permits adding or removing capacity in easily handled, relatively small "blocks of power"—has enabled the Missouri utility to expand its system simply and economically. Engineers early decided upon the unit substation which best suited their purposes—in this instance, a G-E 4600-kva duplex unit.

In addition, utility engineers have achieved maximum flexibility to take care of unexpected load growth. They can meet load shifts simply by shifting the standardized G-E units. If the load should change radically, they can move quickly to other types of standardized G-E unit substations, still employing the "building block" approach.

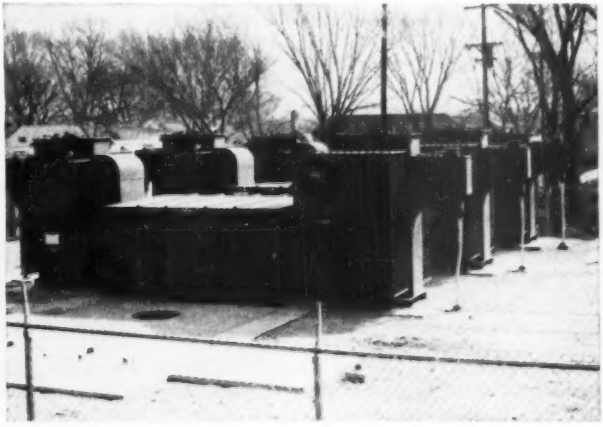
Your needs most likely parallel those of the Kansas City utility, and you, too, will find that advanced planning with the "building block" method keeps system investment as low as possible in relation to actual load. Small "blocks of power," with their flexibility and economy, give insurance against excessive investment in unused capacity.

At the same time, G-E factory-assembled master unit substations simplify planning and purchasing—save time in delivery and installation. And with G-E equipment, you are assured of dependable, first-quality components made possible by repetitive manufacturing methods. For full information, write for Bulletin GEA-4500. *General Electric Company, Schenectady 5, New York.* 321-100



STANDARDIZED SUBSTATION. Supplied complete by General Electric, 3 units and steel structure of Substation 30 were delivered ready for immediate installation. Factory-engineered substations simplify purchasing, save valuable engineering time.

CONCEALED BY TREES. This one-unit substation in residential area shows how proper planting can effectively camouflage installations.



READY FOR NEXT UNIT. Kansas City's Substation 84 has three duplex units already installed. Foundation, in foreground, is set for fourth unit, if required for increased load.

GENERAL ELECTRIC

Question of Climate

(Continued from page 9)

under resolutions passed during the present year by their full membership.

Such organizations as American Public Power Association, National Rural Electric Cooperative Association and Electric Consumers Information Committee are pledged to retention of the preference clause and to support federal construction of various hydroelectric projects.

A number of congressmen interested in power matters are certain to introduce bills on their pet ideas. Purposes of such bills may include:

- Changes in the preference clause.
- Regulation of the cost-allocations made for various purposes with regard to multipurpose projects.
- Restrictions on federal construction of transmission lines.
- Authorization for redevelopment of power potential at Niagara Falls by a group of electric companies.

But as Congressional observers well know, bills are introduced by the thousands in each new Congress.

In a concrete way, there is little in the power field except appropriations that has been scheduled by the new Congress. Only other definite task will be a re-examination of the functions of such regulatory agencies as Federal Power Commission and Securities and Exchange Commission. Republican Rep Charles A. Wolverton of New Jersey, new chairman of the House Interstate and Foreign Commerce Committee, has promised he will undertake this task.

Southern Co Subsidiaries Contract for Coal Supply

Steps to assure an ample and continuous supply of coal for expanded electric generating facilities have been taken by Alabama Power, Georgia Power, and Gulf Power companies, subsidiaries of the Southern Co, in a long-term contract entered into with the Alabama By-Products Corp.

A million-dollar mine development is to be undertaken by Alabama By-Products to open a new mine on the American seam at Maxine in West Jefferson County, Ala. The new mine is expected to be in normal operation by July, 1954.

Initially the three utilities will purchase half-million tons annually.

MEN RESPONSIBLE for planning program for utility course at Georgia Tech are W. E. Wood, executive vice president, Virginia E&P, and Cherry L. Emerson, Georgia Tech's vice president

Utility Officials Class Bound

SEE committee works with Georgia Tech to complete arrangements for four-week summer course on management

The Southeast's top ranking utility executives of the future will be going back to school next summer to obtain a practical knowledge of the many problems which face management.

Arrangements are now being completed by a committee of the Southeastern Electric Exchange and officials of Georgia Institute of Technology in Atlanta for a four-week course in important phases of public utility management. The course will consist of 88 hours of classroom lectures, plus discussion periods, reading and research assignments, and addresses by outside speakers.

Intensive Course . . . Under the plan there will be weekly classroom schedules to provide for four hours of lecture on two subjects daily. At least one address per week will be scheduled in the evening by an outstanding executive.

The idea back of the program is to develop future utility executives and to stimulate interest in some of the important phases of public utility management.

The course is to be held July 6-31, 1953, at Georgia Tech and all inquiries should be directed to C. H. Taylor, Coordinator, Short Courses and Conferences, Georgia Institute of Technology, Atlanta, Ga.

At the last annual meeting of the SEE Pres C. B. McManus appointed a committee to study the problem and work out the course of studies with Georgia Tech officials. The committee included W. E. Wood, executive vice-president, Virginia Electric & Power Co, as chairman. Other members included McManus, president, Southern Co; J. M. Barry, chairman of the executive committee, Southern Co; and McGregor Smith, president, Florida Power & Light Co.

Limited to 55 . . . While the course is designed primarily for southeastern electric utilities, enrollment has been opened to electric utility companies in other sections of the country. Total enrollment has been limited to 55 students, considered the maximum so that each individual may obtain maximum results.

This is the first such course ever to be organized and conducted in the South and a great deal of interest has been stimulated among the utility companies.

The faculty will consist of a selection of top level college professors of experience and competence from Georgia Tech and other leading colleges and universities. In addition there will be men of particular ability from industry and business.

The course itself will devote several hours to general management in which discussions will deal with the philosophy of utility management, organiza-

tional methods and problems, long and short range development programs.

Public Speaking . . . It is a known fact that one of the personal problems of engineers and many men in top management is the inability to think fast and properly present ideas to groups. To overcome this difficulty there will be a public speaking course.

Another important phase of utility management is public utility regulation. This course promises to be one of the most interesting for it is a major management problem today and is likely to grow with the changing economic conditions. It will deal with the economic and legal background, state and federal regulations, and the securities and intercorporate regulations.

Stress on Economics . . . A great deal of time will be spent on economics, the economic philosophy of the private enterprise system, the relationship of the public utility industry to the private enterprise system, and the economic aspects of utilities, including market development, operating costs, rate structure, and effects of taxes.

The committee stated that no course would be complete without full discussion of the personnel and industrial relations of the industry and how best to meet the problems. This section of the course will deal with employee selection, applied psychology, conference leadership, training programs, management development programs, the company communications program, and pensions and retirement.

This will be followed by the public relations program to include evaluation of methods and evaluation of results.

McG-H Offers Industry New Writing Service

A new service for electric utilities and manufacturers has been announced by Technical Writing Service of McGraw-Hill Book Co. The service offers its clients any or all of these phases of publication work: Analysis, planning, writing, editing, designing, illustrating, production, printing, and binding.

Further information can be secured from: Project Consultant, Technical Writing Service, McGraw-Hill Book Co; 330 West 42nd Street, New York 36, N. Y.

Only Nod from FPC Needed . . .

. . . for approval of pipeline to bring natural gas from Canada to U. S. Alberta and Ottawa officials have given their OK

The Federal Power Commission in Washington, D. C., holds the key that will decide both the fate of a $25-million natural gas gamble in Canada and whether Vancouver, B. C., will get gas for its homes and industries.

Both Ottawa and Alberta authorities now have given final approval to Westcoast Transmission Co's gas pipeline from the Peace River area of Alberta (which also taps B. C. fields) to Vancouver and the United States border. At the same time Vancouver and Calgary oilmen are pumping $1 million per month into a $25-million, 150-well wildcat project to prove up vast new reserves in the B. C. Peace River-Fort St. John gas fields with the expectation the FPC will give the third and final okay on the gas line.

Principal participant in the big venture is Pacific Petroleums Ltd, which has spent $6 million since its discovery well blew in last November in the Fort St. John area and plans to invest $19 million more.

Present Case . . . Recently Vancouver, B. C., officials and businessmen went to Seattle to try to convince the city council in the Puget Sound city that Canadian natural gas offered a cheaper, better and safer deal than that offered by a rival gas line from the San Juan basin area of New Mexico and Colorado, a project favored by N. Henry Gellert, president of Seattle Gas Co.

Obvious point: Without the United States market, the Canadian pipeline can't be built. Vancouver and other B. C. points alone can't support the $111-million project.

Official federal engineering surveys put gas reserves in the area straddling the B. C.-Alberta boundary at 2,506 billion cu ft with proven gas reserves distributed on a 3-2 basis in B. C. and Alberta respectively, well above the 1.5 trillion cu ft estimated by Westcoast as required to supply the Pacific Northwest market for 20 years.

22-Year Permit . . . Westcoast holds a 22-year permit from Alberta to export 210 billion cu ft for the first five years compared with the company's stated requirements of 300 billion cu ft, but Attorney-General Maynard of Alberta has advised the Transport Board that the 210 billion can now be regarded as a "minimum initial allotment" and that the company will be allotted enough gas to make its line economically feasible as increased gas reserves allow. Added to the Alberta supply, of course, will be the now-developing B. C. reserves.

Westcoast officials state the B. C. line can be built to the Pacific Coast by the end of 1953 if early approval is obtained from FPC.

Ohio Valley Corp Signs Long-Term Coal Pacts

Ohio Valley Electric Corp has signed agreements with five major coal companies in the Midwest for more than 7 million tons of coal a year to operate two steam power plants which will serve an atomic installation. The contracts run for 15 years.

The coal will be used at generating stations to be constructed on the Ohio River at Madison, Ind., and near Gallipolis, Ohio. Energy produced at the plants will supply the power requirements of Atomic Energy Commission's proposed billion-dollar uranium diffusion center in Pike County, Ohio.

Coal deliveries will start in October 1954 and will cost an estimated $25 million yearly plus transportation charges, which will total approximately $4 million.

The Ohio plant will use coal primarily from Ohio mines and possibly some from West Virginia. Coal for the Indiana plant will come from mines in southern Indiana and western Kentucky.

In an emergency move, Federal Power Commission has granted Columbus & Southern Ohio Electric Co, Dayton Power & Light Co, Southern Indiana Gas & Electric Co, and Toledo Edison Co permission to use certain interconnections to supply the AEC plant without affecting their status under the Federal Power Act. All four utilities are part of the group of 15 utilities making up Ohio Valley Electric.

BLACK DOG PLANT of Northern States Power Co near Minneapolis was dedicated Oct. 19. First 60,000-kw unit is finished

As 215,000 kw Is Added at 3 Plants

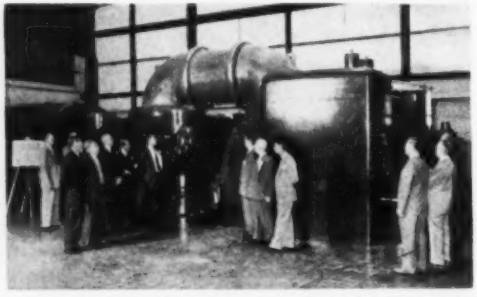
October was a month for power dedications. Additional capacity dedicated to increased United States production included the 215,000 kw that went on the line at the three plants on this page:

• Elrama Station of Duquesne Light Co in Pittsburgh, Pa., dedicated Oct. 16. One 95,000-kw unit is already on the line, its twin and another of 125,000 kw are a-building.

• Black Dog Plant of Northern States Power Co, near Minneapolis, Minn., dedicated Oct. 19. The first 60,000-kw unit has been placed in service. Three others, of 90,000-kw each, will be installed in the next few years. This will bring station capacity to 330,000, making it the largest on the system.

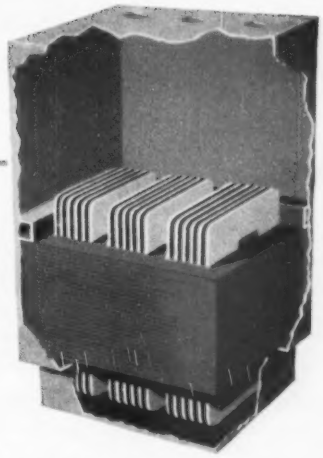
• R. S. Wallace Station of Central Illinois Light Co in Peoria, at which a new 60,000-kw unit was dedicated Oct. 13. This brought station capacity to 215,000 kw.

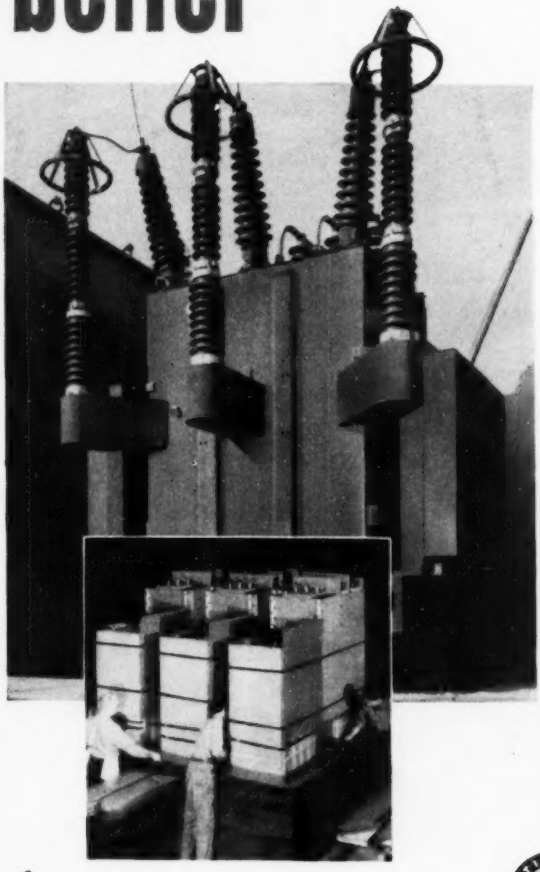
ELRAMA STATION of Duquesne Light Co was visited by Pennsylvania's Gov John S. Fine, left; Pres R. K. Mellon, Mellon National Bank and Trust Co; Duquesne Light Board Chairman P. A. Fleger and Operating Vice Pres W. G. Jene



R. S. WALLACE STATION of Central Illinois Light Co added 60,000-kw Oct. 13. Company entertained 200 community leaders at dedication. They took a look at the new turbogenerator unit, above, which brought plant capacity up to 215,000 kw

This design takes stress better





50,000-kva, 132-kv transformer at West Penn Power Company's Mitchell Station.

The Form-Fit design of Westinghouse Power Transformers has inherent advantages that no other transformer can equal for handling both surge and short-circuit stresses.

The fact that the winding contains only a few coils of large plate area, results in the best relationship between series capacitance and ground capacitance and gives, inherently, more uniform distribution of lightning surge across the winding. This construction eliminates the need for shields, arresters or other internally mounted protective devices likely to cause trouble. As a result, operating hazards are minimized . . . design margins and safety factors are increased.

Because short circuits set up, in all transformers, magnetic fields that tend to force high and low-voltage coils apart, Westinghouse Form-Fit Transformers are arranged with high and low-voltage coils interspersed, so that these forces, acting over broad areas, essentially balance each other and are reduced to absolute minimums. Furthermore, because the core surrounds, supports and protects the coils, the mechanical strength of the mass of core material is added to the strength of the case, providing an unbeatable combination to withstand all mechanical stresses.

To all this, add the advantage of more efficient cooling, and the saving in installation cost because they are smaller and lighter than any comparable transformer, and you'll quickly see why it pays to specify Westinghouse Form-Fit Power Transformers. Ask your Westinghouse representative for further information, or write for Booklet B-4142A: Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-70643-A

YOU CAN BE SURE...IF IT'S Westinghouse

POWER TRANSFORMERS

Meeting the Nation's Growing Power Load

Releasing Kilovars for More Active Duty

Today, utility engineers are asking "At what point . . . do you do what . . . to get more kilovars?" Concern about the method of controlling the flow of kilovars to industrial and residential load is the natural result of generating and transforming increases all along the line.

The ability of capacitors to provide solutions to many kilovar load problems is only now becoming generally recognized. Aside from the positive advantages of improved voltage regulation, reduced I^2R losses and reduced operating costs, is the over-all fact that lines and equipment ahead of the capacitors are released for more load. Eliminating reactive amperes also means more efficient power station performance.

Making capacitor applications more practical and attractive are recent developments that have lowered relative costs. Indeed, the cost for all other means of supplying kilovars has increased far more than the cost of capacitors during the last four years.

The capacitor is not a spectacular or complicated piece of equipment as electrical equipment goes, but through the years Westinghouse has made steady improvement through constant research, development and experience. We could point to many development firsts for the capacitor. In this case, we believe that our greatest contribution has been the introduction of new methods of mounting and applying capacitors, which has made their application more convenient, economical and practical in obtaining over-all efficient system performance. This vast Westinghouse utility experience is being constantly applied to the solution of many other important utility problems. J-97170

YOU CAN BE SURE...IF IT'S

Westinghouse

Series capacitors quadrupled in size

About two years ago, the road block that had long stymied the use of series capacitors on high-voltage lines was removed. This was the development of a means for shunting excess current, during a short circuit, around the capacitors without removing them from the circuit, and thus losing their value during the critical transient period. This switching arrangement was applied to a 15,000-kva bank of series capacitors at Chehalis, Washington, substation on the 230-kva system of the Bonneville Power Administration.

With the way thus cleared, bigger —much bigger—series capacitors came into view. Early in 1952, an installation more than twice as big—for 46,000 kva—was made, also on the Bonneville system. By the year's end, another one, again almost double in size—85,000 kva—will be placed in service on the Bonneville Power Administration system.

Switching high-voltage shunt capacitor banks

The Indianapolis Power & Light Company recently installed on its system one of the first 34.5-kv capacitor banks in this country.

This capacitor bank, totaling 7290 kva, was part of a program of locating var generation close to var load in the most economical and practical manner. This installation demonstrated that high-voltage, shunt capacitor banks can be switched without exceeding 2.4 times normal phase-to-ground voltage on the bus, a value in the range produced by interruption of short circuit currents.

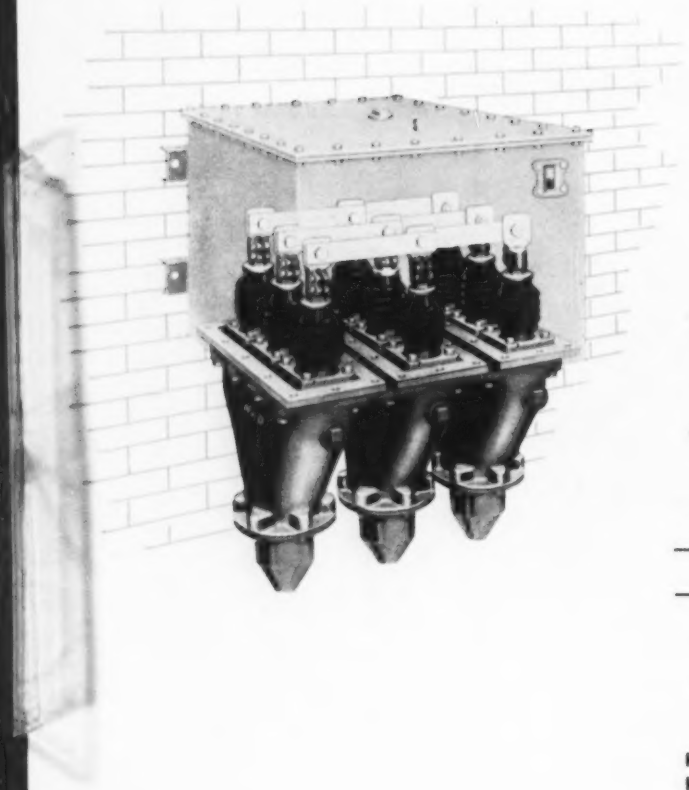
Capacitor switching phenomena

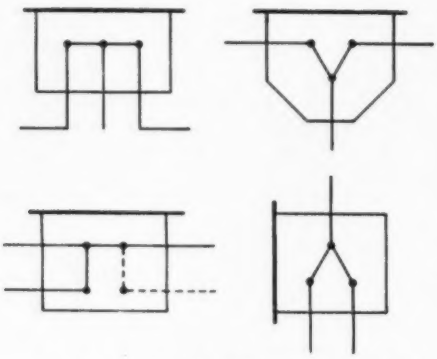
The toughest job you can put on a breaker is the switching of capacitors. For some time, Dr. Roswell C. Van Sickle has been conducting extensive tests in the Westinghouse High Power Laboratory to determine the phenomena of capacitor switching, the performance of "De-ion®" grid oil circuit breakers, plain-break oil circuit breakers, magnetic blast air circuit breakers, and compressed air circuit breakers. For the complete description of Capacitor Switching Phenomena, write for the AIEE Technical Paper on this subject prepared by Dr. R. C. Van Sickle and John Zaborszky . . . Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

Illustration on opposite page

Pictured here is the largest unit in this country of the 69,000-volt rack class. This Westinghouse capacitor application for the Long Island Lighting Company comprises 1005 units for a total of 25,125 kvar.

DON'T CUT THOSE CABLES!
SAVE TIME AND MONEY BY INSTALLING
TYPE "OL" CABLE BOXES TO PROVIDE
DISCONNECTING LINKS FOR SECTIONALIZING.





"OL" CABLE BOXES

Heavy welded steel boxes with "Resistoyl" gasketed covers. Fitted with unit compound filled potheads for complete protection of cable ends. Location of potheads varied to suit installation conditions.

Boxes are filled with oil (or Askarel)—for minimum size and best electric characteristics.

"OL" boxes meet many requirements for non-load break sectionalizing and stop joint connection of cables up to 66 Kv.

Send for new Bulletin BA52 on CABLE BOXES. (Page 10 lists "OL" boxes rated 15 Kv).

A SKETCH OR OUTLINE OF YOUR INSTALLATION CONDITIONS TOGETHER WITH YOUR CABLE DATA WILL BRING YOU OUR QUOTATION ON SUITABLE "OL" BOXES

G & W ELECTRIC SPECIALTY CO.
7780 Dante Avenue, Chicago 19, Ill.
Cable Terminating, Connecting and Sectionalizing Devices
Representatives in principal cities of U. S. A.
In Canada—Powerlite Devices, Ltd., Toronto and Montreal

R. E. DOYLE, JR

J. E. WRIGHT

Doyle, Wright Elected VPs . . .

. . . of Kentucky & West Virginia Power and Kingsport Utilities, respectively. Both will continue in post of general manager

American Gas & Electric Co has announced the election of two new vice presidents of operating companies.

R. E. Doyle, Jr, has been elected vice president of Kentucky & West Virginia Power Co, Inc, and J. E. Wright has been appointed vice president of Kingsport Utilities, Inc.

Both executives will continue in their previous capacity as general manager of their respective companies.

Served as District Manager . . . Doyle, a 22-year veteran with Kentucky & West Virginia, graduated from Virginia Polytechnic Institute as an electrical engineer in 1928. He joined the company two years later as a construction engineer in its Pikeville (Ky.) district. Later he became district engineer at Pikeville, then assistant district manager and, in 1941, district manager.

He was transferred to Kentucky & West Virginia's general offices in Ashland, Ky., in 1947 as assistant general manager. A year later he was promoted to general manager and in 1949 was elected a director of the company.

With Kingsport Since 1926 . . . Like Doyle, Wright is a VPI electrical engineering graduate who started his career in the American G&E system in the Pikeville district of Kentucky & West Virginia. Upon his graduation in 1924, he started with the company's meter department at Pikeville. He was transferred to Kingsport Utilities in 1926 and subsequently became power engineer, commercial manager, and general superintendent.

Wright was made general manager and a director in 1946.

The two companies are among the seven operating subsidiaries of American G&E.

•

Edward M. Naughton, assistant general manager of Utah Power & Light Co, has been named director of the Engine and Turbine Division of National Production Authority. Naughton, on loan to the government for a six-month period, joined Utah P&L in 1935. He was appointed to the present post in 1950.

John Paul Jones assistant director of engineering for Bendix Home Appliances, a division of Avco Manufacturing Corp, has been made director of engineering. Jones replaces **Wallace F. Oliver,** who will be retained by Bendix as an engineering consultant while residing in Florida. **Donald M. Strathearn,** chief engineer, succeeds Jones as assistant director.

Harmon H. Gillman has been appointed technical director of Bishop Manufacturing Corp, Cedar Grove, N. J., manufacturers of electrical insulating tapes and compounds. Gillman formerly was manager of the Materials Division of Gates Rubber Co, which he served for 12 years.

Victor D. Kniss has been named to the newly created post of general sales manager of consumer products for Westinghouse Electric Corp. Formerly general merchandising manager for Firestone Tire & Rubber Co, Kniss in his new position will work directly with consumer products division sales managers and department managers as well as consumer products personnel in Westinghouse Electric Supply Co.

Jackson Kemper has been appointed general manager of the Watson-Stillman Fittings Division of H. K. Porter Co, Inc, Roselle, N. J. Kemper will be responsible for all operating and sales activities of the division, formerly known as the Watson-Stillman Distributor Products Division of which he was sales head.

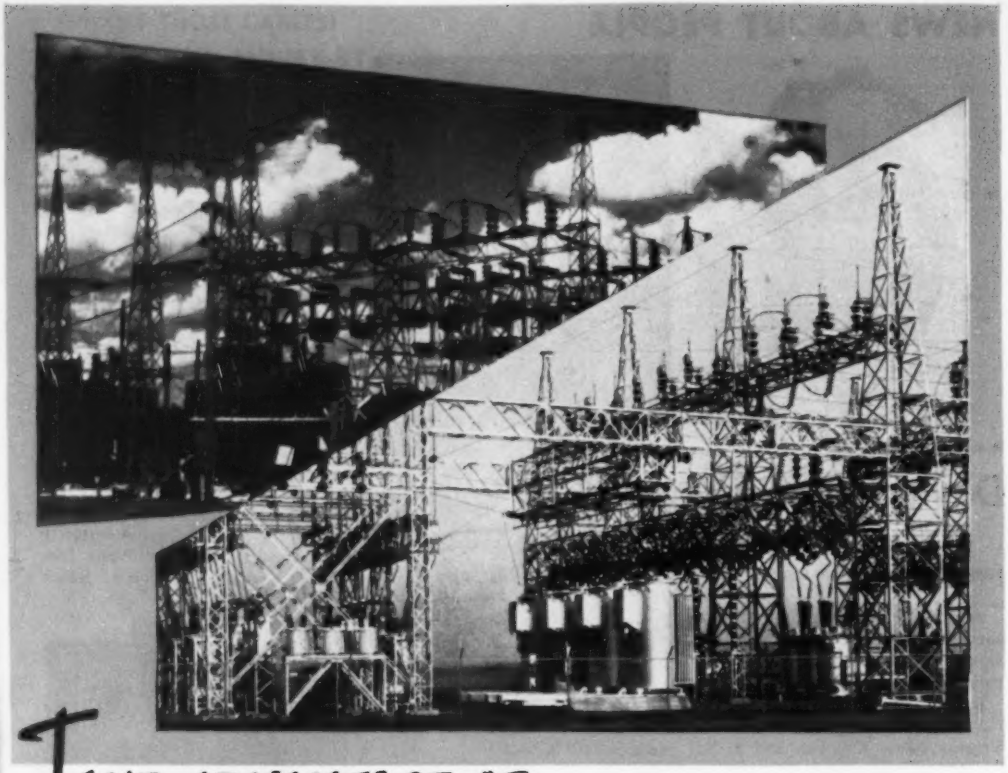
A. G. PATTERSON

Patterson Named Head of Electric Controller

A. G. Patterson has been elected president of Electric Controller & Manufacturing Co, Cleveland. He succeeds R. G. Widdows, who has been named chairman of the board.

The company has also elected Dr John D. Leitch vice president and chief engineer. In addition, Keith C. Moore has been made treasurer and Harold J. Rathbun secretary.

Patterson joined Electric Controller in 1944 as secretary-treasurer. Before joining the company, he was affiliated with Tubular Alloy Steel Corp, Gary,



TAKE ADVANTAGE OF

DELTA-STAR'S SUBSTATION EXPERIENCE

to reduce engineering costs — save your time

Delta-Star has been designing and building substations for the nation's expanding utilities for more than 30 years—and many of these stations have been repeat orders from companies who are more than satisfied with Delta-Star's resources and service.

DELTA-STAR has the knowledge based on proved design and engineering skill, and has worked out a practical standardized system of handling which reduces the time required for planning, fabrication and shipment to a minimum.

DELTA-STAR has the facilities. Component parts for equipment are in stock ready for assembly. Structural steel is accurately cut and punched, then hot-dip galvanized under precise control in our own shops. Careful checking and marking before shipment insures a "custom" fit.

Every detail from anchor bolts to switching equipment is covered by drawings in the construction folder for quick and easy erection.

We shall be happy to consult with you on your substation requirements for any voltage rating and submit data on design, cost and delivery. Contact factory or nearest district office.

WHEN YOU WANT THE BEST IN HIGH VOLTAGE SWITCHING EQUIPMENT SPECIFY DELTA-STAR

DELTA-STAR ELECTRIC COMPANY
DIVISION OF H. K. PORTER COMPANY, INC.
2437 Fulton Street • Chicago 12, Illinois
DISTRICT OFFICES IN PRINCIPAL CITIES

Ind., where he was secretary-treasurer.

Dr Leitch began with Electric Controller in 1937 as head of the development laboratory. He was made chief engineer in 1943, a post he will continue to hold.

Widdows started with the company in 1909 as a salesman, becoming sales manager and a director in 1924. He was elected vice president in 1925 and moved up to the presidency in 1943.

•

Louis T. Barry has returned to Electric Service Manufacturing Co, Philadelphia, as manager of the firm's Industrial Division after serving 17 months as a colonel with the Air Force. Barry, who was recalled to active duty in May, 1951, has been with Electric Service for 32 years.

John K. McDonough has been appointed general manager of the Radio and Television Division of Sylvania Electric Products, Inc. The new general manager of the division, whose headquarters will be in Buffalo, N. Y., joined Colonial Radio Corp, a predecessor company of the division, in 1943. When Colonial became a division of Sylvania in 1950, he was appointed general sales manager.

Louis P. Growney has joined Pacific Power & Light Co as industrial development engineer. He was formerly associated with the industries department of the Portland (Ore.) Chamber of Commerce.

J. H. Frankfort has been made chief project engineer for Walter Kidde Nuclear Laboratories. Before joining the Laboratories, Frankfort was associated with H. K. Ferguson Co's Atomic Energy Division.

Allen H. Center has joined Motorola, Inc, Chicago, as public relations director. Center, who formerly filled a similar post with Parker Pen Co, will be responsible for guiding and executing Motorola's public relations policies and programs.

P. R. Nalder, assistant district manager of the Bureau of Reclamation for the Columbia Basin project, will succeed the retiring **H. A. Parker** as district manager of the project Dec. 20. Nalder started with the project in 1933. A veteran of 42 years' service with the bureau, Parker was named to the manager's post at Ephrata, Wash., in 1950.

Indiana Group Elects Alva Brown President

Alva B. Brown, executive vice president and general manager of Southern Indiana Gas & Electric Co, has been elected president of Indiana Electric Association.

The association has also elected Robert A. Gallagher, president, Public Service Co of Indiana, as its vice president. A. C. Crandall, former vice president in charge of sales of Indianapolis Power & Light Co, has been named secretary-treasurer.

Brown, who has a 26-year service record with Southern Indiana G&E, was named to his present post last September after serving as vice president and operating manager since 1949.

Gallagher, a former president and vice president of the association, has headed Public Service since 1938.

Crandall, who will be in charge of the association's headquarters in Indianapolis, succeeds E. F. Hauser. Hauser, who has filled the post of secretary-treasurer for the last eight years, has resigned because of illness.

William Wight has been named director of public relations of Philco Corp. Wight, Washington (D. C.) vice president of Carl Byoir & Associates since 1944, will make his headquarters at Philco's executive offices in Philadelphia Dec. 1.

Rex Brown has been promoted to the post of division utilization manager for the Southern Division of Southwestern Public Service Co. Brown, formerly a division power engineer, replaces W. L. Pearson, the utility's newly appointed industrial manager (EW, Nov. 10, p 30).

Richard E. Ballard, industrial power engineer for the Central Division of Connecticut Light & Power Co, has been appointed street lighting engineer. He will make his headquarters at the company's general offices in Berlin.

OBITUARY

William J. Lank

William Jefferis Lank, 49, chief electrical engineer of Potomac Electric Power Co, died Nov 16 at Washington, D. C.

Lank, an electrical engineering graduate of the University of Delaware, joined Pepco in 1925 as an electrical draftsman. From 1926 to 1933 he was assistant to the electrical engineer, later becoming assistant to the chief engineer. In 1937 he was named system development engineer and four years later was appointed system planning engineer. He was assigned to the chief electrical engineer's post in 1947.

Lank was a member of the Washington section of the American Institute of Electrical Engineers.

Franklin T. Griffith

Franklin T. Griffith, 82, former board chairman and president of Portland General Electric Co, died Nov. 7.

Griffith, who was admitted to the bar in 1894, started his career as counsel for Portland Railway Light & Power Co, forerunner of Portland Electric Power Co which was evolved into Portland GE. He served as president of the company from 1913 until 1940, when he was made chairman of the board. He retired from the board post in 1947.

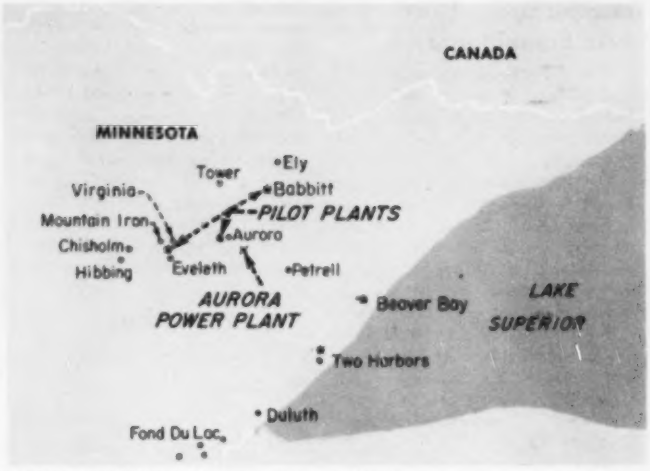
A past president of Northwest Electric Light & Power Association, Griffith had also served as president of the old National Electric Light Association from 1924 to 1925.

W. A. Markland, 59, executive assistant to Prentiss M. Brown, board chairman of Detroit Edison Co, died Oct. 31. Markland interrupted his career as a newspaperman and political writer in 1945 to join Detroit Edison.

John P. Wentling, 74, director of research for Consolidated Treating Co, Minneapolis, died Oct. 31. Before assuming the director's post in 1939, Wentling was associated with Western Red Cedar Association and had served as associate professor of forestry for the University of Minnesota from 1908 to 1928.

John E. Scanlon, retired assistant treasurer of Consolidated Edison Co of New York, Inc, died Nov. 2 at Jersey City, N. J. Scanlon had been with the company 50 years when he retired in 1947.

John B. Story, 59, retired member of the Ohio Public Utilities Commission, died Oct. 30 at Delaware, Ohio.



TACONITE GEOGRAPHY: Processing plants are planned at Beaver Bay, Aurora, Virginia. Minnesota P&L is building a power plant near Aurora; Reserve Mining, one near Beaver Bay

DEPLETION of nation's ore everywhere has prompted development of taconite, the com-

Who will supply . . .

Power For Processing Taconite?

Beneficiation of this iron-bearing rock requires 100 kwhr per ton, in the development now under way in Minnesota's Mesabi Range. Settlement of negotiations for power is pending

An estimated minimum of 600,000 kw generating capacity will be required for processing taconite, the iron-bearing rock, under the projected ore-development program in the Mesabi range. To produce a concentrate from taconite that is satisfactory for use in today's steel mills the iron content must be increased from the 25 to 30% or less contained in the rock to at least 60%, which is higher than the grades of iron ore normally mined. This requires crushing and grinding, washing, magnetic separation, and pelletizing or agglomeration into sizes suitable for the steel mills. It is estimated that four tons of rock will produce one ton of concentrate which will contain 60 to 65% iron. Better Mesabi ores average 50 to 56% iron.

Based on data developed from pilot plant operation, estimates of electrical requirements have been upped first from 60 to 80 and now to 100 kw hr per ton of ore concentrate. Power demand is now estimated at 12,000 to 15,000 kw per million tons per year of ore concentrate capacity.

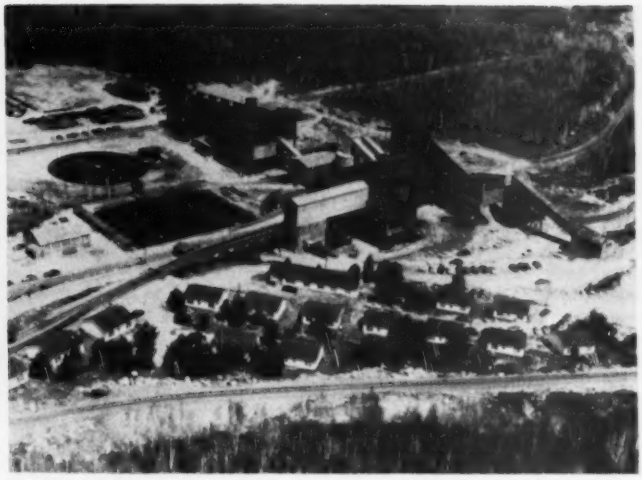
Two companies, Erie Mining and Reserve Mining already have plants in operation for producing iron concentrate from taconite. Oliver Iron has a sintering and nodulizing plant south of Virginia, Minn. which will be used on a developmental basis to supplement the taconite concentrating plant. Each plant is producing or will produce 120,000 to 500,000 tons of concentrate per year. One of these plants has been in operation four years and each company is developing plans for a plant for producing taconite concentrate on a commercial scale. Initial capacity of these commercial scale plants will be 2½ million tons of concentrate upward per year. Plans provide for expansion of each plant to 10 and possibly 15 million tons per year capacity as value of the pellets gains recognition and the economics of the process are fully determined.

Power Supply . . . Minnesota Power & Light Company, the power company serving the area, is presently furnishing power to the two pilot plants already in operation and is under contract to supply the third plant when it goes into operation next year. Whether, however, the power company will supply the large commercial plants to follow, whether they will be supplied by the mining companies themselves or be cared for on some joint basis, has not yet been determined. Negotiations are still in progress and some of the power will probably be supplied by the power company and some by the mining companies.

Reserve Mining's commercial plant program is farther along than any of the others. Plans have been completed and grading started for a 3¾ million ton ore concentrate plant near Beaver Bay, Minnesota, on the shores of Lake Superior. A power plant, designed for Reserve Mining by Sargent and Lundy, is to be built adjacent to the ore concentrating plant. Initial installation will be one 40,000-kw unit.

Moving the Ore . . . Taconite will be mined in the vicinity of Babbitt, Minnesota and shipped by private railroad to the plant near Beaver Bay, a distance of 47 mi. Taconite transportation is offset by proximity of lake shipping facilities for the finished ore concentrate and an unlimited water

paratively low-iron-content rock. Remaining high-grade ore may be reserved for emergency



RESERVE MINING's Babbitt plant has capacity of 300,000 tons of concentrate per year. Offices and housing are being built by company as shown above

supply for condensers and for the processing operation.

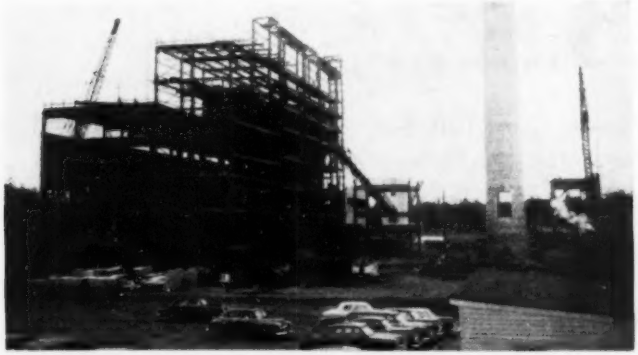
Large quantities of cold Lake Superior water passing through the processing plant will add to plant heating costs. To reduce this problem to a minimum all condenser discharge water will be used in the taconite processing operation, taking advantage of the 10 F temperature rise in the condenser.

Initial installation in the power plant will be one 40,000-kw unit. Three such units are planned for the ultimate future bringing total plant capacity to 120,000 kw which can be increased to meet requirements of the Beaver Bay taconite processing plant.

Due to high fuel costs a plant of high efficiency is warranted. Low temperature of Lake Superior water will lend itself to the high efficiency design.

Power requirements . . . for the mining operation at Babbitt will be considerably less than those for the processing plant. They will be supplied either by Minnesota Power and Light Co or over a 115 kv line from the plant near Beaver Bay. Details of line design have not been determined, but single pole construction with wishbone-type crossarms is being considered because it is adaptable to the curving, narrow right of way. The line is expected to carry an ultimate maximum of 20,000 kw, but conductors will be sized for double this capacity.

Erie Mining's commercial processing plant will probably be in the vicinity of Aurora, Minnesota, five miles east of the present pilot plant and the taconite quarry. The power plant probably will be located on Lake Superior, at Two Islands where an unlimited supply of 42 F water is available. A new harbor and rail terminus at Two Islands will handle taconite pellets. The power plant may expand to 180,000 kv or more. This arrangement will involve a 70-mile 220 kv steel tower transmission line between the power plant and the processing plant.



MINNESOTA POWER & LIGHT's new plant near Aurora is semi-outdoor design; boilers will be between steel structure and smoke stack. Scheduled for operation in March 1953

New Projects . . . To meet normal load growth in the area plus that caused by anticipated accelerated development resulting from taconite operations, Minnesota Power and Light Company has under construction a semi-outdoor generating station of two 44,000 kw units southeast of Aurora, Minnesota. Provision has been made at this site for substantial additional capacity when and as needed.

Oliver Iron is developing a taconite mining site near Mountain Iron, Minnesota, adjacent to their taconite pilot plant and near their aglomeration plant. Oliver is talking about a 10 million ton taconite plant but details aren't available.

MEETINGS

First Start-Up of New Plants . . .

. . . is discussed at a meeting of PEA's Prime Movers Committee. The procedure varies from utility to utility

Procedure for preparing and executing initial start-up of new plants varies widely from company to company among members of the Pennsylvania Electric Association. Despite this, major untoward happenings are rare.

This came out at the meeting of the PEA Prime Movers Committee in Pittsburgh Oct. 30 and 31. The group agreed, however, that effective means must be found to familiarize the selected crews with the equipment and coordination of controls.

Whether men who had long worked in 150 psi stoker-fired plants could learn the intricacies of modern large high-pressure plants remained a moot question. But several committee members agreed that a fair percentage of such operating crews have met the challenge.

At first, crews usually feel large operating staffs are needed. A week at the elbows of operators in a comparable station elsewhere usually convinces them small staffs are adequate, most of the group believes. Others feared long-ingrained habits formed in old plants prevented crews from accepting the greatly different operating techniques for modern plants.

Put in Writing . . . Instruction books are almost universal adjuncts of the preparatory and training periods. One company, however, lets new crews write their own manuals while they are learning from supervisors and the manufacturers' agents. Whether to train only the supervisors or the entire staff during the months while the equipment is going in proved to be another unsettled question. Most companies resort to "dry runs" before actually energizing modern equipment.

Getting the feel of things is facilitated in one company by breaking up the 4-shift crews into two with overtime for several weeks for the extra four hours. This way, half the total staff is on hand to experience whatever happens as each segment of the plant is started. Another company insists prospective operators themselves and not erection crews start the units.

Another company arranged to have engineers acquire and pass on the experience and familiarity to the operating forces. Winning management itself over to the urgency of a thoroughgoing program of instruction was often as much a task as the actual training, several member delegates reported.

Some executives, they said, seem to believe extensive controls make the plant push-button simple and that a few untrained men can run them. Solid agreement emerged that the instrument expert holds the key to successful plant initiation and subsequent operation.

Variation . . . A trend indicated by the discussion is toward omission of the costly blow-out of piping and boiler before making the initial run. Dependence is being placed on painstaking inspection and temporary strainers to insure absence of foreign material. One company had found burlap bagging, cardboard cartons, etc in a large pipe to be the cause of inordinately large pressure drops.

Silica remains a sizeable power station problem despite major improvements in the art of removing it. Differences in success or failure of the measures were believed by S. F. Whirl, chemical operating engineer of Duquesne Light Co, to be due to obscure differences in nucleation under varying environment. Meanwhile, until more is known about possible optimum content of silica, it is better to keep it to a minimum, he said.

'Power Cost' Talk Set for Interstate Parley

"Cost of Purchased Power Versus Generated Power in Chemical Plants" is the topic H. Carl Bauman, American Cyanamid Co, New York, will discuss at Interstate Power Club's meeting planned for Dec. 8 at the Hotel Martinique, N. Y.

Among the other speakers will be Robert C. Hienton, Cleveland Electric Illuminating Co. His subject will be "How to Make Long-Term Plans for Industrial Sales." L. F. Livingston, E. I. du Pont de Nemours & Co, will talk about industrial research and demonstrate du Pont products.

B. L. England to Address PUAA Region 2 Meeting

Bayard L. England, president of Atlantic City Electric Co and Edison Electric Institute, will address the Public Utilities Advertising Association's Region 2 winter meeting. The two-day meeting is scheduled for Dec. 4-5 at the Claridge Hotel, Atlantic City, N. J.

Other speakers will be PUAA's Pres Paul L. Penfield, Detroit Edison Co; P. L. Smith, president, National Association of Electric Companies; Elon Borton, president, Advertising Federation of America; and C. Fred Westin, Public Service Electric & Gas Co, first vice president of PUAA.

CALENDAR

American Standards Association
34th Annual Meeting, Waldorf-Astoria Hotel, New York, Nov. 25.

American Society of Mechanical Engineers
Annual Meeting, Statler Hotel, New York, Nov. 30-Dec. 5.

***Edison Electric Institute**
Prime Movers Committee, Hotel Martinique, New York, Dec. 1-2; Commercial Lighting Committee, Netherlands Plaza Hotel, Cincinnati, Dec. 3-4; Industrial Power-Heating Section, Jung Hotel, New Orleans, Dec. 8-9; Cost Management Program Subcommittee, Sheraton Hotel, Pittsburgh, Dec. 10-11; Home Service Committee, EEI Headquarters, New York, Dec. 11-12.

20th National Power Show
Sponsored by American Society of Mechanical Engineers, Grand Central Palace, New York, Dec. 1-6.

Public Utilities Advertising Association
Winter Meeting, Region 2, Claridge Hotel, Atlantic City, N. J., Dec. 4-5.

Interstate Power Club
Hotel Martinique, New York, Dec. 8.

Institute of Radio Engineers
Joint Electronic Computers Conference with American Institute of Electrical Engineers, Park Sheraton Hotel, New York, Dec. 10-12; Joint High Frequency Measurements Conference with AIEE, Statler Hotel, Washington, D. C., Jan. 14-16, 1953.

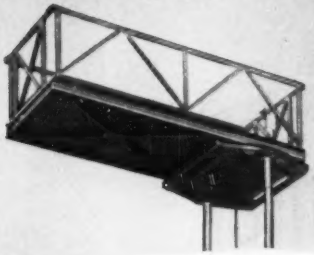
Canadian Electrical Association
Eastern Zone: Engineering Division, Nova Scotian Hotel, Halifax, N. S., Jan. 15-16, 1953; Sales Division, General Brock Hotel, Niagara Falls, Ont., Jan. 22-23, 1953; General Division, Mont Tremblant Lodge, Mont Tremblant, Que., Jan. 29-30.

American Institute of Electrical Engineers
Winter General Meeting, Hotel Statler, New York, Jan. 19-23, 1953.

National Rural Electric Cooperative Association
11th Annual Meeting, Civic Auditorium, San Francisco, Jan. 26-29.

* Addition this week.

"The Accepted Standard with Utilities Everywhere"



Proved by many years of trouble-free service, *Powers-American* bodies set the pace as the number one choice with utilities everywhere . . . the measurement of top quality and performance throughout the industry. "Job-engineering" steps up crew efficiency, lowers operating costs . . . protects your investment. *Powers-American* has the type body and equipment to do your particular job most efficiently and at lowest cost.

HYDRAULIC TOWER

Platform extends to 30' above ground and can be revolved full 360°. Operation is controlled from truck cab or by workman on platform. Models are also available in ground-to-platform heights of 21' and 25' for installation on chassis having a rated capacity of 1½ tons or more.

LINE CONSTRUCTION BODY (600)

Available in 9' to 14' lengths, equipped to meet individual needs in any phase of utility work.

REVOLVING AERIAL LADDER

Models available in working heights of 23' 6", 26' 6", 30' 6", and 32' 6" for all styles of bodies.

LIGHT CONSTRUCTION BODY (SERIES 35)

Ideally suited for all types of light duty maintenance and construction work.

MAINTENANCE BODY (400)

Designed for medium duty general service. May be furnished with winch and derrick capable of handling 40' poles.

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There are many styles of *Powers-American* Bodies not shown here. Write for descriptive catalog today.

CORONA IS

Protect Your Power Transformer

with

CORONA *free*

DESIGN

SLOW, STEADY ATTACKS OF CORONA deep within your transformer can age it and bring it to the point of breakdown.

Corona ionizes and chars insulation. This further lowers insulation resistance and permits the insulation to conduct progressively more electricity. When that happens, breakdown is just a matter of time.

These facts are important reasons why you'll want your next power transformer to have corona-free design.

You can have full assurance that corona won't steal life from your transformer. Corona-free design will protect your transformer up to 100% of maximum test voltage. You *can* obtain the power transformer that will maintain full strength and last for years without growing old.

A-2928

ALLIS-CHALMERS

MILWAUKEE 1, WISCONSIN

CORONA-FREE DESIGN

DANGEROUS!
These seven corona-free transformers are rated 230,000 volts high voltage, 72,000 volts low voltage, 30,000 kva each, with load ratio control.
KEEPS TRANSFORMERS YOUNG

"BARKER" in center of main show window gave "spiels" about the display, the contest and the prizes, inviting the lookers inside

"In" Side Show Promotes Freezers, Refrigerators

22,000 Cincinnati Gas & Electric customers see show and get cards to participate in prize awards. 6,822 take these cards to dealer stores where they get sales story

Proof of the effectiveness of Cincinnati Gas & Electric's promotion, "The 'In' Side Show," featuring refrigerators and freezers is found in the pick up of 22,000 cards by customers coming to the company's sales floor and the return of 6,822 stubs from these cards to dealers' stores. The promotion was worked on the basis of a very close tie between dealers, distributors, the utility, and one of the city's three daily newspapers. Promotions are handled on a rotation basis with the newspapers, each taking its turn and each clamoring for a turn. The newspaper publicizes the activity. The utility advertises it. Participants must get coupons from the newspaper and present them at the show on the utility sales floor. This stimulates newspaper circulation. The participating newspaper stations a news boy at the door to sell papers to the people as they enter the display floor.

In the refrigerator-freezer promotion, coupons were clipped from the paper and presented at the show, where the card for entering the contest was received. The visitor saw the show which was both entertaining and promotional in nature. Then, in order to participate in the prize awards, the customer must fill out the space on the stub of the card received giving name, address, phone, dealer's name and address and not more than three words on his favorite "inside" feature of one of the freezers or refrigerators on display.

This completed stub is presented to the dealer. This serves to focus interest in the dealers' stores and permits them to tell the "inside story" of freezers and refrigerators to prospective customers first-hand after the customer has been prepared to receive such a story by the show and the accompanying display of freezers and refrigerators. Thus participating dealers were provided with names of live prospects who presumably were in the mood to buy.

Major prizes awarded were: First: $300 refrigerator or freezer and frozen food for six months for a family of four; Second: $300 refrigerator or

COUNTER CARDS, posters and window streamers were supplied to dealers

FAST START was given the show by Sid Stone, right, well known TV pitchman. Others are: Robert Jacobson, Cincinnati Electric Association; J. R. Hartman, vice president, Cincinnati Gas & Electric Co; and Harry Ulmer, Cincinnati Times-Star

MYSTIC RAY DETECTOR brought out words "The Inside Story", stamped with invisible ink on tickets, entitling customer to a prize

freezer; and Third: frozen food for six months for a family of four.

Other prizes were awarded to participants at the show. When the customer presented the coupon from the Times-Star, he was entitled to draw three tickets from the three freezers or refrigerators on display in the tent. Some of the tickets contained single words of the phrase, "The Inside Story" stamped on with invisible black light ink. These tickets were then placed under the "Mystic Ray Detector," and if the customer had a ticket with one word glowing, he received a package of frozen food; two words on two tickets, a frozen chicken. If words appeared on all three tickets forming the complete phrase "The Inside Story," he received an entire frozen meal.

A carnival atmosphere prevailed at "The 'IN' Side Show." To help carry out the carnival idea a "barker" occupied the center of the main show window and throughout each day gave "spiels" about the display, the contest, and the prizes.

All makes and models of refrigerators and freezers, were on display on the sales floor. Distributors helped to defray expenses of the promotion. Twenty-five distributors displayed either a refrigerator or a freezer and many displayed both appliances.

Ads were run by distributors and dealers and by the Cincinnati Gas & Electric Co in all of the three daily newspapers, and in suburban and rural newspapers. The company carried radio and TV advertising, car cards were carried in all motor coaches, and stories were carried in the company's employee publication, the O K News.

GLAMOR was added to kick-off breakfast by Marie Medford, Sue Sacks and Shirley Potts of Cincinnati Gas & Electric

LINES OF PEOPLE, waiting to see the show and get cards for prizes were a daily occurrence

Mediation Board Boosts Pay 13¢

Connecticut agency awards across-the-board increase to Derby G&E workers. Union, utility bound to accept findings

Derby (Conn.) Gas & Electric Co employees belonging to the Utility Workers Union of America, CIO, have been awarded an across-the-board increase of 13¢ per hour, retroactive to Aug. 1, by the Connecticut State Board of Mediation and Arbitration.

The company and the union had agreed to submit their differences to the board and to accept its decision as "final and binding on the parties." The union agreed to call off its strike and resume operations.

Inequities . . . Further adjustment of what the board classed as "inequities" is included in advances of 5¢ to 6¢ starting Sept. 1. The parties will negotiate the application of this fund and any differences unresolved will be submitted to the board for final decision. From March 1, 1953, an additional across-the-board increase of 7¢ per hour will take effect.

The basic claim of the union was that wages and working conditions in the company were substantially less than in comparable utilities. The company claimed that it has offered reasonable adustment on some points to the union, but that it is now faced with financial problems so serious that even before the award the company was not earning its dividend.

In its findings the board did not agree with the claim of the union that in deciding these matters it should seriously consider standards in the industry which are superior to the common practice in the area concerned. It saw some merit in the claim that weight should be given to a combination company over a straight gas or electric company.

More Fringes . . . The findings continue the eight paid holidays at present observed. Scheduled hours worked on holidays will be paid at double time; non-scheduled hours command 2.5 times the regular rate. When an observed holiday falls on an employee's day off or during his vacation, he is entitled at company option to an additional day off, or an extra vacation day, or a day's pay. For emergency overtime 1.5 times the regular rate is paid, with a two-hour minimum. Such paid overtime begins when the employee is called from his home until completion of his work and his return to the designated headquarters of the company.

Employees with 15 years' service are now to be granted three weeks vacation, but depending on company operations, the third week may or may not immediately precede or follow the regular fortnight's vacation. The union's request for double time for Sunday work and for work done on an employee's second day off is denied by the award. All shift employees will be paid time and one-half for hours worked on regular scheduled days off. The union's request for shift premium distinct from any allowance for such in the basic rates was denied.

Long Island Lighting Co Revises Pension Plan

Long Island Lighting Co has adopted a novel cost-of-living pension plan which it feels will win wide acceptance in coming years.

It has supplemented its existing pension program by the addition of a companion equity annuity plan which represents an entirely new approach. The new plan was approved at the last shareholder meeting and is based upon the investment of the pension funds in common stock and other equities.

In this way retired Long Island Lighting employees will receive part of their pension from a fund which is designed to reflect the effects of changing living costs. A detailed study of the last fifty years indicates that retirement income from a fund invested partly in bonds and partly in common stocks tends to fluctuate with the cost-of-living more closely than a fixed dollar income. That is the main purpose of supplementing the insured annuity plan with a new equity plan—to control purchasing power of the dollars of retirement income.

The company management and the union locals worked together in the development of the equity plan and feel it is a major stride forward toward greater financial security for employees after their retirement.

WSB Okays Pay Boosts for Arizona Workers

Cost-of-living and hourly wage increases have been granted 478 office, shop and field workers of the Salt River Valley Water Users' Association and Salt River Project Agricultural Improvement and Power District of Phoenix by the Regional Wage Stabilization Board.

At the same time, the board denied escalator plans involving more than 1,000 employees of the two companies.

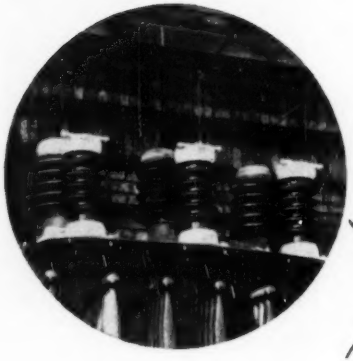
The ruling on the Water Users Association petition permitted payment of a 5¢ per hour cost-of-living increase to 218 workers in job classifications where housing was furnished, and similar increases for 225 employees not given housing. Increases were effective Jan. 1, 1952. A small number of clerical workers won 8.6¢ per hour increases.

Action on the Agricultural Improvement and Power District application provided for a 5.2¢ per hour raise for 26 office and clerical workers whose duties were revised as the result of a company job evaluation study.

LABOR BRIEFS

Wage Stabilization Board has approved an 8% wage increase by Virginia Electric & Power Co to 1,300 employees of the Utility Workers Union, CIO. The increase, retroactive to Oct. 1, was granted by the company in a contract negotiated in August, subject to WSB approval.

Emerson Electric Manufacturing Co and International Union of Electrical, Radio & Machine Workers, CIO, have reached agreement on a new wage contract which runs until April 1, 1955. The contract provides for a higher wage of 5.13% for 3,400 workers at the company's plants at Jennings and Washington Park, Ill.



PERFORMANCE and PRICE

of Thorex Arresters Fills Long-Felt Need in Single-Customer Substations

Lightning protection of single-customer substations was, at one time, necessarily a compromise. Arresters of a grade associated with central station protection could not be justified by the class of load. Arresters whose price adapted them to the application were inadequate to provide the dependability of service required by most industrial customers.

For the first time, O-B Thorex lightning arresters offer you the right combination for this common problem. An exceptionally high grade of protective performance is now available at an attractive "popular" price.

Investigate Thorex arresters for your single-customer substations -- you will find they fill a long-felt need.

Ohio Brass

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MANSFIELD OHIO, U.S.A.

FINANCIAL

$100 Million in 'New Money' . . .

. . . is sought by larger utility companies during the last quarter of 1952 to carry out their expansion programs

The larger utilities are coming into the market in the last quarter of 1952 for over $100 million in "new money" to take care of their expansion program. This is evident from announcements by the companies of their plans in the last few weeks.

Preferred Stock Offering . . . The most recent is Commonwealth Edison Co's offer to its commonholders on a 1-for-12 basis 1,144,333 shares of $25 par preferred stock. The record date for those entitled to receive rights has been set for Nov. 24. It is expected that they will expire on Dec. 10. It is to be underwritten by a syndicate headed by Glore, Forgan & Co and the First Boston Corp. It is subject to the Illinois Commerce Commission and the Securities and Exchange Commission approval.

Debenture Offering . . . Previously the Consolidated Gas Electric Light & Power Co of Baltimore announced that it would offer $16,484,300 of convertible debentures to commonholders at a price of $100 for each $100 debenture, in the proportion of $100 of debentures for each 30 shares of common stock held about Dec. 1. The warrants will expire around the middle of December.

Present plans call for the debentures to be convertible into common stock at the owner's option on a sliding scale. If converted into common on or before Dec. 3, 1954, the company will issue five shares of common for each $100 of debentures and $15 in cash; up to Dec. 31, 1956 five shares and $20 in cash, and after that date four shares of common for each $100 of debentures. The company proposes to invite competitive bids for the unsubscribed debentures.

Common Stock Offering . . . Cleveland Electric Illuminating Co also announced plans recently that it will offer rights to its commonholders to subscribe to 557,895 shares of common stock. The offer is on a 1-for-5 basis to stockholders of record Nov. 24 and to expire about Dec. 19.

Duquesne Light Co will sell about Nov. 20 a new issue of 80,000 shares of common stock as "new money." This is in addition to 170,000 shares to be sold by the Philadelphia Co.

Bond Offerings . . . The financing table on page 43 lists $25 million of first mortgage bonds scheduled to be sold competitively in November and December. Gulf States Utilities Co. will sell $10 million Nov. 24 and Florida Power Corp $15 million Dec. 3.

Puget-PUD Sale Opponent Is Named in Court Suit

J. W. Bryan, Sr, Kitsap PUD commissioner of Bremerton, Wash., and admittedly the leader of the forces within the county opposed to PUD purchase of the Puget Sound Power & Light Co, is the target for a suit which challenges his legal right to be a commissioner.

John C. Merkel, Kitsap County prosecutor, filed the suit at the request of Henry A. Brown, who was defeated by Bryan in the 1950 race for the PUD commissioner post for District No. 1. The suit charges that Bryan was not a legal resident of the district.

Bryan was instrumental in the election to the commission Nov. 4 of C. E. Ferguson, who also is opposed to the purchase. Ferguson defeated incumbent C. Jack Jones, who favored the purchase.

A few days after his election, Ferguson secured a temporary injunction against the deal, which he claims to be unconstitutional. A hearing on the Ferguson suit is scheduled for today.

TVA Reports Net Income of $25 Million in Fiscal '52

The Tennessee Valley Authority has reported a net income of $25,096,000 on its power operations during the fiscal year ended last June 30. This net income was realized on gross revenues of $95 million from sales of 20 billion kwhr. A return of 4.7% was earned on the average net power investment of $555 million.

TVA's other operations, navigation, flood control, fertilizer, and munitions development, and the development of the agricultural, forest, and other resources of the region—were carried out for a net expense of $5,618,000.

At the fiscal year's end TVA had total assets of $1,410,314,000, an increase of a quarter billion dollars from the previous June 30. Net investment in plant and equipment in service and under construction increased from $960,498,000 to $1,170,105,000.

Power plant in use increased by about $100 million, representing principally the cost of additional generating capacity which was increased from 3,181,000 on June 30, 1951, to 3,860,000 kw on June 30, 1952. Installed capacity is slightly more than 4.2 million kw today.

Total funds available to TVA for the 1952 fiscal year amounted to $291,225,000, including Congressional appropriations of $238,390,000. About $229 million of this sum was expended for new construction, with steam plant construction accounting for almost $148 million.

TVA redeemed $5 million of its outstanding bonds during the year and paid an additional $11 million into the general fund of the U. S. Treasury.

Heads PSC

Leland F. Leatherman has been appointed chairman of the Arkansas Public Service Commission to fill out the term of Judge Scott Wood, deceased.

Today in Utility Finance

YIELDS (%)

Quality	Bonds			Preferred Stocks			Common Stocks		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
DATE									
1952									
Nov. 13	**2.97**	**3.00**	**3.14**	**4.05**	**4.26**	**4.50**	**5.14**	**5.50**	**5.99**
Nov. 6	2.98	3.03	3.17	4.04	4.28	4.59	5.22	5.53	6.04
3rd 1952	2.99	3.03	3.16	4.10	4.26	4.61	5.18	5.59	5.96
2nd 1952	2.95	3.00	3.09	4.05	4.31	4.60	5.38	5.85	6.42
1st 1952	2.95	2.99	3.13	4.11	4.29	4.66	5.35	6.03	6.47
4th 1951	3.02	3.07	3.21	4.32	4.50	4.91	5.42	6.18	6.84

Data: Reis & Chandler, Inc.

EARNINGS

Company	Period Months	Ended	Net Income 1952	Net Income 1951	Earnings Per Common Share 1952	Earnings Per Common Share 1951
Arizona Public Service	12	Sept.	$2,938,175	$1,904,752	$	$
California Electric Power	12	Sept.	2,367,008	1,623,420	0.90(a)	0.55(a)
California Oregon Power	12	Oct.	13,575,481	11,734,788	....	....
California-Pacific Utilities	12	Sept.	532,785	438,534	2.00	1.63
Community Public Service	12	Sept.	1,120,376	798,530	....	....
Gulf States Utilities	12	Sept.	7,045,414	5,897,917	1.82(b)	1.61(b)
Idaho Power	12	Sept.	3,560,547	3,103,682	3.17	2.70
Interstate Power	12	Sept.	2,266,524	1,859,935	0.91(c)	0.78(c)
Northwestern Public Service	12	Sept.	917,081	861,267	....	....
Public Service Co of New Mexico	12	Sept.	989,718	1,042,387	0.71	0.75
Public Service Co of Oklahoma	12	Sept.	4,874,257	3,821,993	....	....
Rockland Light & Power	8	Aug.	989,831	984,581	0.51	0.54
Shawinigan Water & Power	9	Sept.	3,816,542	3,308,556	1.39	1.16
Southwestern Gas & Electric	12	Sept.	3,721,927	3,356,553	....	....
Tucson Gas Electric Light & Power	12	Sept.	1,226,285	890,442	2.30(f)	2.26(f)
West Penn Electric consolidated	12	Sept.	12,637,636	10,280,238	3.13(e)	2.92(e)

Notes—(a) Based on shares outstanding at end of period; (b) Based on 3,124,168 shares in 1952 and 2,884,590 shares in 1951; (c) Based on average number of shares outstanding; and (e) Before special tax adjustment and based on 3,960,000 shares in 1952 and 3,526,000 shares in 1951.

FINANCING

Company and Description	Amount of Offering ($000)	Offering Price	Yield to Public
WEEK OF NOVEMBER 13-19			
Bonds			
Long Island Lighting—1st mtg 3½% 1982	$20,000	101%	3.32%
Common Stock			
Duquesne Light—250,000 sh	7,507	$29.75	5.04
WEEK OF NOVEMBER 20-26			
Bonds			
Gulf States Utilities—1st mtg 1982	$10,000	.....	.....
Preferred Stock			
Commonwealth Edison—1,144,333 sh conv. (to be offered commonholders on 1-for-12 basis, record Nov. 24 to expire Dec. 10)	.....	.....	.....
SCHEDULE FOR NOVEMBER, DECEMBER, JANUARY			
Bonds			**Bid Date**
Florida Power Corp—1st mtg 1982	$15,000	.....	Dec. 3
Ohio Power—1st mtg	22,000	.....	Jan. 20
Iowa-Illinois Gas & Electric	8,000	.....	Jan. 27
Debentures			
Consolidated Gas Electric Light & Power—conv. 1967 (to be offered to commonholders on basis of $100 debenture for each 30 shares of common, record about Dec. 1)	$16,484	.....	Dec. 1
Preferred Stock			
Ohio Power—100,000 sh $100 par	10,000	.....	Jan. 20
Iowa-Illinois Gas Electric—60,000 sh	.....	.....	Jan. 27
Common Stock			
Hawaiian Electric—50,000 sh (being offered commonholders on 1-for-10 basis, record Oct. 3 to expire Nov. 26; no underwriting)	$1,000	$20.00	10.00%*
Cleveland Electric Illuminating—557,895 sh (to be offered commonholders on 1-for-5 basis, record Nov. 24 to expire about Dec. 19)	.....	.....	.....
Western Light & Telephone—65,168 sh (to be offered to commonholders on 1-for-5 basis, record about Nov. 26 to expire Dec. 9)	.....	.....	.....
UNSCHEDULED AND UNDER CONSIDERATION			
Bonds			
Central Main Power—1st general mtg	$6,000	.....	.....
Toledo Edison—1st mtg	7,500	.....	.....
Central Hudson Gas & Electric—1st mtg	6,000	.....	.....
Kansas City Power & Light—1st mtg	12,000	.....	.....
Common Stock			
Central Main Power	$5,000	.....	.....
Toledo Edison—500,000 sh	.....	.....	.....

Notes—* Dividends are subject to 2% Hawaiian withholding tax. If this tax is deducted, the yield would be 9.80%. †170,000 shares will be sold by Philadelphia Co and 80,000 shares will be sold by the company as "new money."

FINANCIAL BRIEFS

Ohio Edison Co is planning to raise about $30 million to finance its expansion program by selling large amounts of preferred and common stock early in January. Likely offerings are 479,000 shares of common and 150,000 of preferred. . . . **Rockland Power & Light Co** expects to raise about $24 million in the next two years through sale of bonds, preferred and common stock. F. L. Lovett recently stated that his company would probably sell $5.5 million first mortgage bonds and an equal amount of preferred stock in 1953. In 1954 the utility expects to sell $6 million each of bonds and preferred and $1 million common. The money will be used to carry out the company's construction program.

Duke Power Co has been authorized by Federal Power Commission to split its no par value common stock on a 2-for-1 basis. The company will issue 2,777,615 additional shares, increasing the number of shares of its issued and outstanding no par value common to 4,166,421. The issuance will reduce the value of Duke's outstanding common from $75 per share to $25.

Standard Gas & Electric Co has received approval from the U. S. District Court in Wilmington, Del., to go ahead with its dissolution plan.

REGULATION

Hearings on Washington Water Power Co's request for an 8½% rate increase are expected to be held in Spokane sometime next month. The company's application for the boost was filed two years ago and hearings were held at Spokane last year. In Idaho, where the company recently refiled its application for an increase, a hearing has been scheduled for Dec. 16 at Coeur d'Alene.

Scranton Electric Co has filed new schedule of electric rates with the Pennsylvania Public Utility Commission to become effective Jan. 7, 1953. The increase would average between 8 and 16% for residential, commercial, and industrial users. Shortly after the filing, Scranton's city council authorized its solicitor to file a formal protest with PUC against the proposed increase.

LINE MATERIAL'S PORCELAIN PLANT BURNS TO GROUND

Loss put at a million; firemen save office, galvanizing buildings

Kenova, W. Va., Oct. 29—Flames early this morning destroyed the Line Material J-D porcelain plant with a million dollar loss.

Entire production facilities and new equipment of the porcelain plant were destroyed, but the galvanizing plant and a new office building with complete records were undamaged.

Firemen from two states fought blaze. No injuries were reported.

Cause of [illegible] was determine[illegible]

LINE MATERIAL

We never knew we had so many Real Friends!

Early in the morning of October 29th, fire completely destroyed our porcelain products plant at Kenova, West Virginia.

But in the face of this serious loss, we have had a most heartening experience. Even before the ashes had cooled, other porcelain and insulator hardware suppliers were phoning, wiring, and writing to offer their help to meet our requirements. Some suggested they put on extra shifts for us. One even offered to turn over a complete kiln to our employees!

Practically everyone with porcelain and insulator hardware manufacturing facilities has come to our rescue. We are deeply moved, and most grateful to these people. It is an overwhelming demonstration of the fine cooperation that exists in this electrical industry.

Fortunately, at the time of the fire, we had substantial stocks of porcelain in our 55 warehouses. This, coupled with the help of these other manufacturers, will permit us to supply your porcelain needs until we can completely reestablish our porcelain production facilities.

We hope you will continue to call on us to help supply your porcelain requirements. We are able to do this because of the wonderful cooperation we are receiving from other manufacturers.

We never knew we had so many real friends!

W. D. Kyle Jr.

President, Line Material Company
(a McGraw Electric Company Division)
Milwaukee 1, Wisconsin

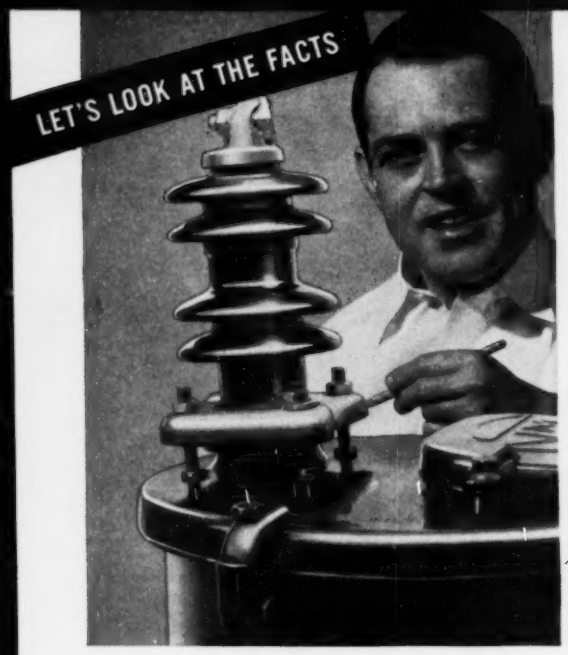


FIGURE 1. Cover bushings on an L-M Round-Wound 15 kva 7200 volt transformer. Note the generous width of skirting for high creepage distance, the four-bolt cover clamp that assures even pressure on gasket and porcelain.

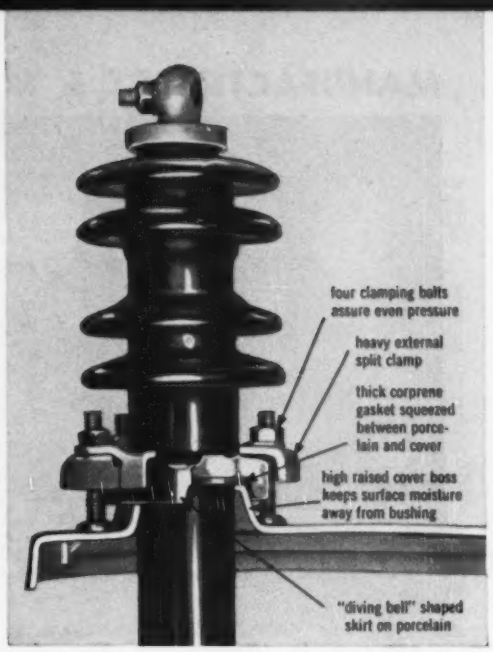

four clamping bolts assure even pressure
heavy external split clamp
thick corprene gasket squeezed between porcelain and cover
high raised cover boss keeps surface moisture away from bushing
"diving bell" shaped skirt on porcelain

FIGURE 2. Close-up of triple-seal against moisture. 1. Deep-skirted porcelain gives "diving bell" effect. 2. Thick corprene gasket, squeezed between porcelain and steel boss. 3. Deep-drawn cover boss keeps moisture away.

Cover Bushings on L-M Round-Wound Transformers Triple-Protected Against Moisture, Corona

"Diving Bell" design porcelain, thick corprene gasket, and high raised boss on cover provide triple barrier

By **ALVIN B. COYLE,**
Manager Transformer Sales
Line Material Company

In the design of cover bushings, L-M engineers have gone to great lengths to eliminate moisture entrance and corona, which would cause undesirable radio interference.

The porcelain itself is designed with exceptionally generous creepage distance and high wet-flashover characteristics. The best grades of electrical porcelain are used, with the surface fully glazed. At the bottom is an extra skirt or lip, which is curved downward to give a "diving bell" effect in keeping moisture away from the gasket.

The porcelain is mounted on an exceptionally high raised boss in the cover, which in itself leads moisture away from the bushing. Between the boss and the porcelain is a thick corprene gasket tightly squeezed by the four-bolt cover clamp. Corprene has the initial hermetic sealing property of synthetic rubber plus the elasticity and non-flowing characteristics of cork to maintain a permanent vapor-proof seal.

The result is a bushing that provides exceptional protection against moisture and breathing; it is corona-free and causes no radio interference.

Get Full Information

These cover bushings are standard equipment on all L-M Round-Wound transformers of 5000 volts and over. For more information on these and other features of these outstanding distribution transformers, ask the L-M Field Engineer; or write Mr. Coyle at the Transformer Division, Line Material Company, Zanesville, Ohio (a McGraw Electric Company Division).

"Round Wound" is a Line Material Company trademark.

LINE MATERIAL 87R

Transformers

Complete Coordinated Equipment for Distribution Today

LM ORTO

McGRAW AWARD, posthumous, is accepted at NEMA luncheon by William C. Johnson Jr, right, son of the late recipient. Pres W. A. Roberts, Allis-Chalmers, left, makes the presentation; Pres Curtis W. McGraw, McGraw-Hill Publishing Co, is seated at his left

EEI's PRESIDENT Bayard L. England, left, who is also president of Atlantic City Electric Co, was on the convention program as was James F. Lincoln, retiring president of NEMA and head of Lincoln Electric Co. New NEMA head is Pres L. G. Hall, Stackpole Carbon Co

NEMA Plans Fight on Excise Taxes

Policy committee set up at annual meeting to try to modify "discriminatory" levies on electrical appliances

National Electrical Manufacturers Association has set up a tax policy committee to oppose and, if possible, modify present "discriminatory and unscientifically applied" excise taxes on electrical appliances.

This announcement came during the 26th annual meeting of NEMA, held in the Haddon Hall Hotel, in Atlantic City, Nov. 10-13.

R. L. White, chairman of the board of Landers, Frary and Clark, who heads the new advisory group, told NEMA that the committee is bringing to the job the following three main views:

- Existing excise taxes on electrical appliances are delaying expansion in the use of electricity in the home by putting a penalty on the purchase of appliances
- A lower excise tax should be levied over a broader field of manufactured goods to correct present discrimination against electrical household appliances
- Present excess profits taxes are unsound and bad for both business and the country, inasmuch as they tend to restrict the normal expansion of industry.

The committee's job will be to prepare recommendations regarding federal excise tax structure and to present testimony before Congressional committees urging adoption of such recommendations.

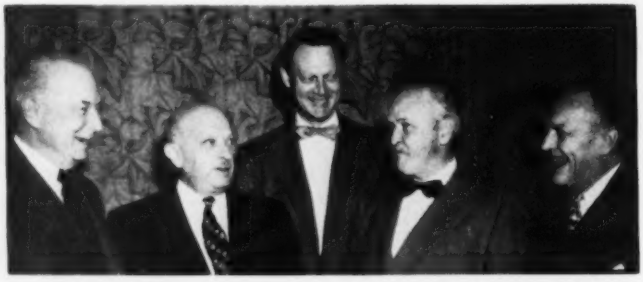
This effort by NEMA to lift "luxury" taxes from household appliances comes at a time when electric utilities are tooling up for a big sales year in 1953.

Bayard L. England, president of Edison Electric Institute, informed NEMA that on the basis of returns to date a recent EEI sales survey shows that 80% of companies reporting believe the 1953 sales year will be as good or better than 1952. None expects a worse business climate, England said.

The vast majority of power companies are at the present time in a mood to increase their sales and advertising budgets.

Expanding sales plans for 1953 are further reflected in plans which call for the expansion of sales staffs and organizations.

All reporting companies that merchandised in 1952 will continue to



1953 NEMA OFFICERS are, left to right, President: L. G. Hall, president of Stackpole Carbon Co; Vice Presidents: A. A. Berard, president of Ward Leonard Electric Co; Hoyt P. Steele, executive vice president of Benjamin Electric Manufacturing Co; J. W. Corey, president of Reliance Electric & Engineering Co; and Treasurer, A. F. Metz, president of The Okonite Co

Reduce tree trimming costs with G-E Aerial Cable

General Electric's Super Coronol* pre-assembled aerial cable fills the need for distribution circuits up to 15kv where appearance, safety, and service continuity are desired at a reasonable cost, and where underground construction is not warranted. Along tree-lined streets in particular, G-E aerial cable has been outstanding—average-sized limbs have no effect on its performance—the cost and ill-will resulting from tree trimming is largely eliminated.

The record of hundreds of installations shows that G-E aerial cable will stay in service when wind, snow, ice, and falling trees place open wire in trouble. In some cases, even where the pole plant was down, G-E pre-assembled aerial cable continued to operate satisfactorily for days while lying on the ground.

For more information see your General Electric wire and cable specialist. Or write Section W40-1127, Construction Materials Division, General Electric Company, Bridgeport 2, Connecticut.

Registered Trade-mark General Electric Company

These willow trees in Eastern Massachusetts could have caused trouble when a new transmission line was installed. The power company avoided difficulty by using General Electric's 3-conductor, 1/0 Awg 15kv pre-assembled aerial cable—30,000 feet were used. Tree conditions were no problem.

This installation of G-E pre-assembled aerial cable is located in a wooded residential section. It is a 5kv cable and has given unfailing service in all kinds of weather for more than 10 years.

In this Massachusetts city the shortest route for a new transmission line was through the center of town. Yet customers' trees were not destroyed because G-E pre-assembled aerial cable was used; good customer relations were maintained.

Even severe tree conditions like this in an urban residential area were overcome by the use of G-E pre-assembled aerial cable. This is a 3-conductor, 4/0, 5kv line that has stayed in service in spite of high wind, sleet, snow.

You can put your confidence in—

GENERAL ELECTRIC

merchandise in 1953 and half of the group will add to their sales personnel. More than a fourth of the companies having dealer sales organization will expand their staffs.

Pointing out that the cost of installation of major appliances is still a problem, England urged the formation of a joint committee from NEMA, the National Contractors' Association and EEI to study ways of breaking down this wall that holds up mass sale of major appliances.

During the convention, the 1952 James H. McGraw Manufacturer's Medal and Purse was awarded posthumously to William C. Johnson, former president of NEMA and executive vice-president of Allis-Chalmers Manufacturing Co. The award recognized Johnson's "personal efforts toward establishing the economic and social purposes and benefits of voluntary engineering standards."

Curtis W. McGraw, president of McGraw-Hill Publishing Co, presented the award for the committee of awards. W. A. Roberts, president of Allis-Chalmers accepted the award for Johnson's family and former business associates and in turn presented it to William C. Johnson, Jr, son of the late recipient.

Also honored during the convention were four industry pioneers. One of the four, W. D. Steele, president of Benjamin Electric Manufacturing Co, was the recipient of the first NEMA 60-Year certificate to be awarded in the association's history. Fifty-year certificates were awarded to the following: Lester C. Hart, Hi-Voltage Equipment Co; Frank A. Poor, vice-chairman of the board, Sylvania Electric Products, Inc, and Charles C. Remsen, assistant to the president, Diehl Mfg. Co.

NEMA's new officers, elected at the annual meeting are:

President, L. G. Hall, president of Stackpole Carbon Co; Vice-Presidents: A. A. Berard, president of Ward Leonard Electric Co; J. W. Corey, president of Reliance Electric & Engineering Co; John L. Busey, vice-president of General Electric Co; W. A. Elliott, president of Elliott Co; Hoyt P. Steele, executive vice-president of Benjamin Electric Co. Treasurer, A. F. Metz, president of Okonite Co. Members at Large: Allen F. Sheldon, president, Kennecott Wire & Cable; J. H. Jewell, vice-president, Westinghouse Electric Corp.

NEW ELECTRICAL CONSTRUCTION

A weekly selection of U. S. electrical construction projects announced by private and government utility systems involving more than $70,000. Also listed are major industrial and construction jobs where electrical work is indicated or implied

UTILITIES

Proposed Construction

Ala., Selma—U. S. Eng., P. O. Box 1169, Mobile, Zone 7, plans by Platt Roberts & Co., Merchants National Bank Bldg., Mobile, electronics maintenance bldg., maintenance hangar warehouse at Craig Air Force Base, $2,500,000.

Fla., Jacksonville—City, City Hall, voted bonds, power plants addns. $18,000,000.

Georgia—Jackson Electric Membership Corp., Jefferson, 107 mi. rural distr. line and system imprvs., Jackson Co. $515,000.

Indiana—Knox County Rural Electric Membership Corp., Vincennes, 50 mi. rural distr. lines and system imprvs. $530,000.

Iowa—Bureau Reclamation, Dpt. Interior, Bldg. 1 A, Denver Federal Center, Denver, Colo., one 40,000/53,333/66,667 kva autotransformers with lightning arresters for Sioux City Sub-station, Missouri River Basin Proj., Spec. DS 3832. L. N. McClellan, ch. engr.

Md., Fort Ritchie—U. S. Eng., First and Duglas Sts. N.W., Wash. 25, D. C., constr. rehabilitation primary and secondary electric distr. sys., ENG 49-080-53-38-(32).

Missouri—Sac-Osage Electric Co-operative, Eldorado Springs, 234 mi. rural distr. lines, sys. imprvs., Cedar Co. $750,000.

Mo., Sedalia—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., primary electric distr. and street lighting at Sedalia Air Force Base, Inv. 23-028-53-35.

Montana—Big Horn County Electric Co-operative, Lodge Grass, 40 mi. rural distr. lines, 10 mi. 66 kv transmission line, sys. imprvs., Big Horn Co. $380,000.

Neb., Oxford—City, electric plant exten., incl. generating equip., building changes, wiring, etc. $111,000. Harold Hoskins & Assoc., 231 N. 11 St., Lincoln, engr.

New Mexico—Mora-San Miguel Electric Co-operative, Mora, 156 mi. rural distr. lines and sys. imprvs., Mora Co. $320,000.

N. C., Cherry Point and Camp Lejeune—F. Wks. Office, Bldg. 1005, Marine Barracks, Camp Lejeune, steam generating unit Marine Corps Air Station, furnishing one high temperature, high pressure, steam generating unit with continuous steaming capacity of 150,000 lbs. per hour, with appurtenances, auxiliaries and services of a supervising erector at Marine Barracks, Camp Lejeune, Spec. 34103. Plans deposit $10.

O., Gallipolis—Ohio Valley Elec. Corp., 20 Church St., New York 8, N. Y., 1 million kw generating station, near here, $120,000,000. American Gas & Electric Service Corp., 30 Church St., New York 8, N. Y., consult. engrs.

Ore., Astoria—P. Wks. Officer, 13th Officer, 13th Naval Dist., 1611 W. Wheeler St., Seattle Wash., installing experimental cathodic protection systems at Tongue Point Naval Station, Spec. 36459. Plans deposit $10.

Pa., Phila.—Phila. Electric Co., 900 Sansom St., sub-station addn., Richmond and Schiller Sts., $250,000.

Tenn., Tullahoma—U. S. Eng., P. O. Box 2091, main sub-station at Arnold Engineering Development Center, Inv. 53-7.

Tex., Dallas—WFAA-TV, Ralph W. Nimmons, mgr., 1122 Jackson St., 1,747 ft. TV-steel signal tower, 17 mi. southwest of here, near Webb, $400,000.

Tex., Tyler—Tyler Broadcasting Co., Tyler, television station, $200,000.

Va., Monogram and Northwest—P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, radio transmitter antenna sys. at Monogram and radio receiver antenna sys. at Northwest, earthwork, wood poles, electrical equip. etc. NOY 74887 Spec. 35790. Plans deposit $50.

Washington—Bonneville Power Admin., 827 N. E. Oregon St., Portland, Ore., clearing 16.5 mi. right-of way Shelton-Allyn No. 1, 115-kv line, Mason Co., Inv. 6786. Plans deposit $10. L. C. Stewart, 827 N. E. Oregon St., Portland, Ore., engr.

Low Bidders & Contracts Awarded

Calif., Muroc—Electro Constr. Co., 122 N. Larchmont St., Los Angeles, Calif., CA, $297,555, electrical distr. sys. Edwards Air Force Base, ENG 04-353-53-37. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Oct. 30.

Colorado—Jille & Cannon, Eads, Colo., CA, $241,324 est. $250,000, 60 mi. 69 kva transmission lines La Junta, Southeast Colorado Power Assn., La Junta, Colo. Bids Oct. 22.

Fla., Orlando—Howard E. Smith, 100 Disston Blvd. N., St. Petersburg, Fla., CA, $165,000 electrical sys. for aircraft parking aprons at Pinecastle Air Force Base, Inv. 53-24. U. S. Eng., P. O. Box 4970, Jacksonville, Fla. Bids Oct. 24.

Ill., Pinckneyville—G. J. Beiter Electric Mfg. Co., 3830 Olive St., St. Louis, 8, Mo., Owner Builds, $125,000, 1 story, 48,000 sq. ft., brick, concrete steel electric manufacturing PLANT.

La., Rayville—Fairbanks, Morse & Co., 1000 St. Charles Ave., New Orleans, La. LB $164,247, furnish, erect 1,900 hp. electric generating unit, City, Rayville, La. Bids Nov. 3.

Montana—Newport News Shipbuilding & Dry Dock Co., Newport News, Va. LB $835,800, three 8,400 hp. hydraulic turbines for Little Porcupine Power Plant, Missouri Souris Div., Missouri River Basin Proj., Spec. DS 3793. Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. Bids Oct. 30.

N. J., Fort Monmouth—Davis & Reed, Newton Square, Pa., CA, $166,500 conversion electric system, U. S. Eng., 80 Lafayette St., New York 13, N. Y. Bids Sept. 25.

South Carolina—Farmers Telephone Co-operative Kingstree, S. C., Owner Builds, $700,000, 632 mi. telephone lines, at Kingstree.

Texas—Guadalupe Valley Electric Co-operative, Gonzales, Purchases, Day Labor, $95,500, 68 mi. rural electric power lines, Gonzales and Guadalupe Counties.

Texas—Alpha Constr. Co., 207 Tuloma Bldg., Tulsa, Okla., LB $294,997, exten. 450 mi. lines in Wilbarger, Foard, Clay and Hardeman Counties, Santa Rosa Telephone Co-operative, c/o Carl Freeling mgr., 1405 N. Main St. Vernon Tex. Joe E. Ward, Oil & Gas Bldg., Wichita Falls, Tex., engr.

INDUSTRIAL, COMMERCIAL & PUBLIC BUILDINGS

Proposed Construction

Fla., Miami—City, City Hall, plans by Robert Law Reed & Assoc., Dupont Bldg., Miami, City Hall, $4,000,000.

Ky., Louisville—Jefferson Co., Bd. Educ., W. Jefferson St., raise in school tax approved by voters Nov. 4 will finance 6 Junior High Schools, 3 elementary schools, school addns., $13,500,000. Fred Hartstein, McDowell Bldg., archt. E. R. Ronald & Assoc., 554 S. Third St., consult. engrs.

N. Y., New York—Irving Maidman, 1501 Broadway, New York, Zone 36, 12 story office bldg., 305-325 W. 42 St. $5,000,000.

O., Portsmouth—Emigh Ohio Valley Newsprint Co., (O. R. Emigh, 322 Poplar St., Wyoming, Cincinnati, O.) newsprint paper mill on 43 acre site. $70,000,000.

THIS IS A 150 Kv CORONA-FREE TRANSFORMER BUSHING

It is designed for use on high voltage test transformers, particularly in connection with laboratory radio-influence testing.

It is well recognized that the ordinary power transformer bushing, an excellent device from the point of view of flashover and puncture, is notably poor with respect to generation of radio interference. Special design attention is required for bushings to be used in laboratory transformers for this purpose.

Lapp has designed and built similar bushings for corona-free operation up to voltages of 250 kv RMS.

This assembly is typical of many "special porcelains" supplied by Lapp. Typical in that Lapp was called upon to do the engineering and designing of the piece as well as to produce the complete assembly. When this procedure is feasible, it has much to recommend it, in that it allows complete unified responsibility for the final article. Other advantages include knowledge of the production requirements to secure high quality, sound porcelain designs and to so combine these porcelains with metal parts as to achieve long life and trouble-free service.

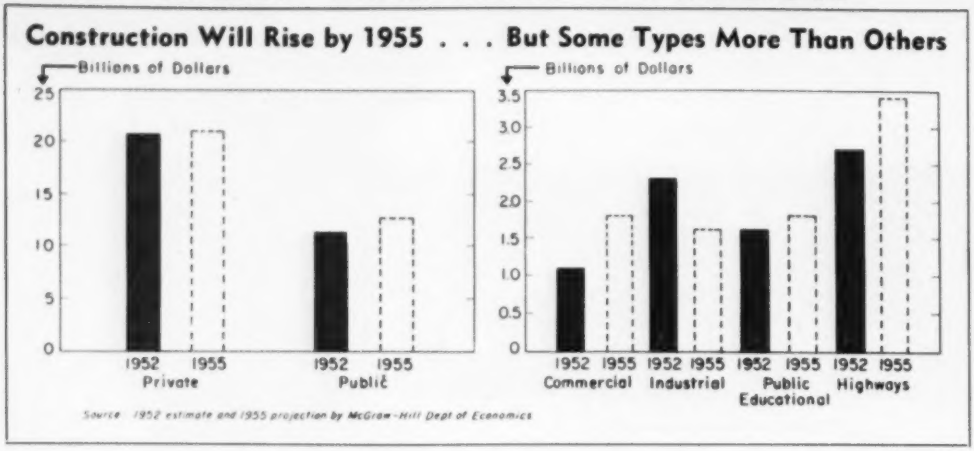
This knowledge is part of the Lapp heritage. It is in evidence throughout the complete line of Lapp insulators which are offered for sale as complete assemblies. It is demonstrated as suggestions for better production, or more balanced design, presented by Lapp to those manufacturers for whom we produce only the porcelain parts.

"Porcelain by Lapp" offers you the best possibility of long life and trouble-free service.

Lapp Insulator Co., Inc., Le Roy, N. Y.

Lapp

ELECTRICAL BUSINESS OUTLOOK



Construction—A Boost to Prosperity

Construction will be a powerful force favoring prosperity over the next few years. There will be more building next year than in 1952. Though volume may drop a bit for a year or two in the near future—construction is expected to hit record heights in the middle 1950's.

There's no prospect of anything like the big postwar boom when total construction went up 45% between 1947 and 1952 even if inflation is eliminated from the figures. But total activity in the mid-'50's will be somewhat higher than now. The charts (above) give some idea of likely levels of construction in a typical year in the mid-'50's—taken here as 1955, although it could be 1954 or 1957.

Some Bumps in View . . . The transition from today's level to the one shown on the charts probably won't be a smooth one. In fact, it's more than likely that construction is in for a dip sometime between now and 1955. There may be some decline as military construction drops off and before other types of work can take its place. And housing—still booming—is expected to hit a couple of lower years in the near future. But any dip is expected to be slight and temporary. The need for new structures—from department stores to sewers—is too great.

Private industrial building will almost surely be lower in the mid-'50's. Industry will have completed by far the major part of its post-Korea defense expansion by the end of next year. Some building will go on after that—but at a more normal rate of perhaps $1.6 billion a year against this year's $2.3 billion. Utilities will be spending less, too, once the present expansion is complete.

Housing Slump Ahead . . . Housing is also vunerable. The rate of building will be running ahead of the rate of formation of new families next year; so vacancies will increase. That's likely to bring on a slump in home building. But, in the opinion of many housing experts, it won't last long. They figure demand for larger homes to house the millions of growing children will keep housing starts near one million a year through most of the decade.

Strong Demand for Commercial Buildings . . . Other types of private construction are expected to rise by the mid-'50's. Commercial building, severely limited by shortages and government controls, is rising now, should go up about 15% next year, and as much as 60% by 1955. Most major cities still need more office space, and the need for new stores—especially big shopping centers—is very large. Work on amusement buildings and other non-residential structures should also pick up.

Declines are more than likely in some types of public construction. Military construction will be down near half its present level when the present build-up stage is finished—assuming Russia doesn't start another war scare. And related federal work, especially for atomic energy, is also expected to decline. Together, military and public industrial work may be about $2.6 billion in 1955, compared to about $3.6 billion now.

Most Public Work Will Rise . . . But most other types of public work are on the rise. Accumulated needs for state and local facilities are tremendous. By 1955, the U. S. is likely to be spending as much as 30% more for highways and 15% more for schools. Public housing programs also will have a chance to get going by then. Congress held them back to free men and materials during the Korean defense buildup.

Work on these and other essential public works is expected to boost total public construction by 10% or more by the mid-'50's. And public construction is likely to keep rising through the rest of the decade. Even with a high level of construction it will take ten years to bring roads, schools, and hospitals up to satisfactory standards.

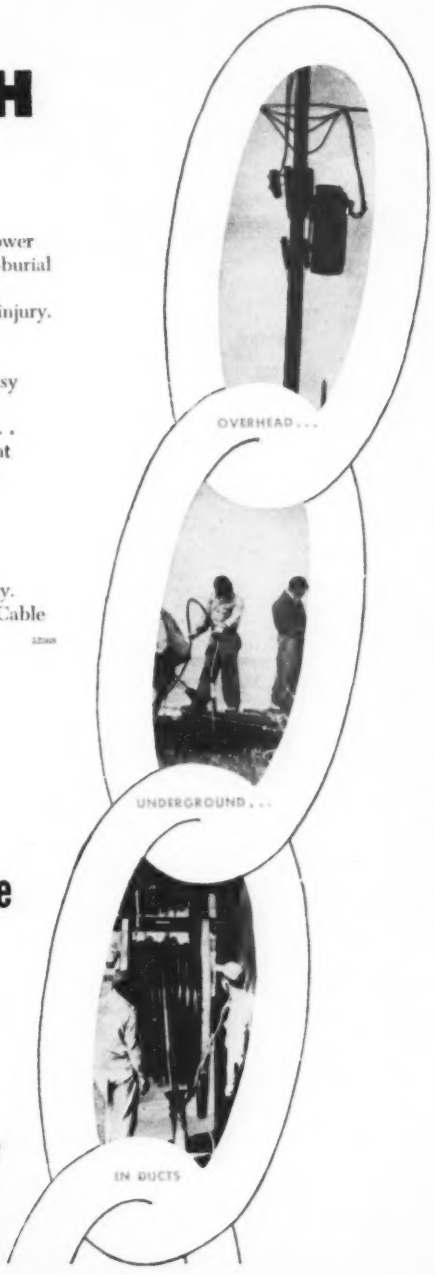
NO WEAK POWER LINKS

with DURASHEATH

ALL-PURPOSE DURASHEATH* can be used for every type of power and lighting application. In combined duct, aerial and direct-burial use, Durasheath effectively resists electrolysis, condensation, weathering, sunlight, organic decay, abrasion, and mechanical injury.

DURASHEATH COSTS LESS to install . . . because it is flexible, easy to handle, light in weight. It may be run in one continuous length *without expensive splicing.* It costs less to maintain . . . because its tough neoprene jacket can take terrific punishment in any use. It costs less to stock . . . because, instead of three cables, one—versatile Durasheath—meets every electrical distribution requirement.

SPECIFY DURASHEATH for economy, reliability, and durability. Consult your Anaconda Representative. Anaconda Wire & Cable Company, 25 Broadway, New York 4, New York.



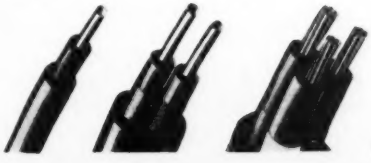
the right cable for the job

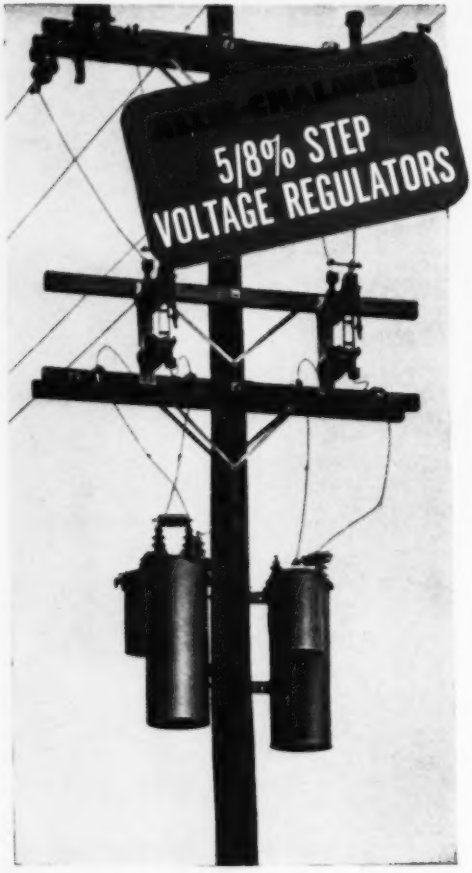
ANACONDA® wire and cable

for traffic control, airport† power and lighting, mines, industrial plants, railroads, street lighting, and many other uses.

available in all sizes—from large to small—single and multi-conductor.

*Trademark
†when ordered to CAA Specification L-824.





You can mount these regulators anywhere — on the ground or on a pole. Two of the three regulators for the installation shown above are on one pole; the other is on the next pole down the line.

Revenue Loss
on overloaded feeders

OVERLOADING FEEDERS at the cost of maintaining voltage is sometimes the only way you can keep up with expanding demand. It costs you revenue — and profits. You can keep revenue *up* on overloaded lines with Allis-Chalmers distribution regulators. They'll give you an accurate ± 1 volt band over a 20% operating range — plenty of room there for expansion.

Best of all, the cost is low. And installation and maintenance are easy. Simplified installation, as a matter of fact, gives you one other important advantage with Allis-Chalmers distribution regulators — they are flexible. They can be shifted from feeder to feeder easily as conditions require.

Full information is available at your nearest A-C district office. Call today or write Allis-Chalmers, Milwaukee 1, Wisconsin. A-3078

RATINGS AVAILABLE	7620 Volts—15, 50, 100 amp 5000 Volts—50, 100 amp 2500 Volts—100, 200 amp

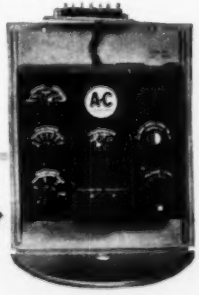
Feather-Touch Control is Friction-Free for Accuracy

Accuracy of Allis-Chalmers distribution regulator controls cannot be upset by friction because of the new regulating relay. Its design is practically friction-free. The linked dual cantilever beam bearing, which is frictionless, replaces friction-type bearings and coil springs used in other types.

LESS CLEANING AND MAINTENANCE are required on relay contacts because they are made of platinum ruthenium. They will stand up under the type of service that causes ordinary silver contacts to become coated.

DESIGNED FOR FAST INSTALLATION . . . there's only one adjustment to make when installing — just set the calibrated voltage level.

GET COMPLETE FACTS on *Feather-Touch* controls. Write for Bulletin 01M7866-1.



ALLIS-CHALMERS

Originators of 5/8% Step Regulation